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Competitive Orders, the Final Monopoly, and the Second Most Important Invention in History

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COMPETITIVE ORDERS, THE FINAL MONOPOLY, AND THE SECOND MOST IMPORTANT INVENTION IN HISTORY

Steven Ferrey[*]

I. COMPETITION, MONOPOLY, AND POWER ANOMALIES

Monopoly power matters. Law controls the structure and operation of American business. Government regulatory orders are changing the conventional monopoly model to promote greater competition in the second most important invention in history.[1] Competition is now being introduced at a brisk pace by government orders and rules that are affecting the country's last major monopoly industry.[2] Electric power is the last of the U.S. regulated industries,[3] and is heralded as the second most important invention of all time.[4] The specific laws enacted for the power sector are critical to the future of the U.S. economy. This article narrates how, and whether, the law is used to maintain monopoly or foster greater competition in power amid significant friction between state and federal regulatory law. The courts must reconcile state and federal conflicts and address legal anomalies to determine the future of monopoly and competition in electric power.

For the past two decades, through changing presidential administrations, the federal government has promoted greater competition

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[1] James Fallows, *The Fifty Greatest Breakthroughs Since the Wheel*, ATLANTIC MONTHLY, November 2013, at 56.

[2] *See infra* Section III.

[3] STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES & EXPLANATIONS 502 (Wolters Kluwer Aspen, 6th Ed. 2013) [hereinafter ENVIRONMENTAL LAW].

[4] Fallows, *supra* note 1.

in power markets through the federal tax system and through several orders of the Federal Energy Regulatory Commission (FERC). Even though the power industry has been a monopoly, anti-trust law, the "essential facilities doctrine," and the Noerr/Pennington doctrine apply to electricity.[5] Even when federal law is contrary to state policy, the Supremacy Clause of the Constitution preempts any state law that is contrary to federal law. However, federal courts have recently ruled that some of these federal initiatives are beyond the jurisdiction of the federal government.[6]

Under the Federal Power Act, and per the U.S.'s federalist system of laws, states exercise separate legal authority over power, which is distinct from federal jurisdiction. Some states have used their authority to forcefully resist the federal government's move for more competition, fearing competition may move lower-cost in-state power to other metropolitan areas and disrupt lower costs enjoyed by incumbent in-state stakeholders.[7] Other states have enhanced competition through their own set of additional state rules and orders. However, many states have embraced regulatory mechanisms, which *de jure* or *de facto* promote intrastate commerce in power and disadvantage interstate commerce.[8] Screened through the Commerce Clause of the Constitution, even when consistent with some federal orders to promote greater competition, state rules are now being ruled unconstitutional when they promote in-state interests by discriminating with regard to the geographic origin of power.[9]

This article addresses the legal points of friction between contrary laws at the state and federal levels, which conflict with regard to their promotion of monopoly, or competition, in power. Section II sets up the foundation of why electricity is different than every other item in U.S. commerce.[10] Section III examines the key FERC orders mandating greater competition in power pursuant to the Federal Power Act and the Supremacy Clause of the Constitution.[11] Section III also analyzes key federal court decisions on the preemption of power decisions for the second most important invention of all time.[12] On the flip side, Section III also examines two recent federal court decisions against the exercise of federal authority over

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[5] *See* STEVEN FERREY, THE NEW RULES: A GUIDE TO ELECTRIC MARKET REGULATION (Pennwell 2000) [hereinafter NEW RULES]; STEVEN FERREY, THE LAW OF INDEPENDENT POWER (Thomson Reuters West, 34th Ed. 2014) [hereinafter INDEPENDENT POWER].

[6] *See infra* Sections III. C.4, III.D.3.

[7] *See infra* Section III.C.6.

[8] *See infra* Section IV.

[9] *See infra* Section V.

[10] *See infra* Section II.

[11] *See infra* Section III.

[12] *See infra* Section III.

power.[13] These federal court decisions weave an increasingly complex legal backdrop for the future of power.

Section IV switches to the state regulatory arena to examine in detail four types of state rules that are moving the power market to greater competition.[14] State authority is subject to judicial review when states have *de jure* or *de facto* constructed a tilted regulatory platform which favors their in-state power and industries, and discriminates against out-of-state power.[15] The U.S. Supreme Court declared that there is nothing more fundamental in interstate commerce than electricity; all 48 contiguous states import interstate power from outside.[16] The Commerce Clause of the Constititon prohibits states from regulating commerce in power based on the place of origin of the power.[17]

Section V analyzes key legal challenges that have been successful under the dormant Commerce Clause against several state attempts to regulate power.[18] Section VI evaluates the friction over competition between state and federal authority, and charts the legal path forward.[19] In a bifurcated state-federal system of U.S. governance, introducing competition is not a seamless regulatory fit or straightforward exercise.[20] When states introduce their own state laws and incentives to promote greater competition in power, it only passes legal scrutiny if the states construct a level playing field for all interstate commerce.[21]

Ultimately, there is more at stake here than abstract concepts of competition: power is one of the most important inventions of all time and the foundation of the American economy in the 21st Century.[22] This article navigates monoply, interstate commerce, and the friction in transition to 21st Century competition in power in America. It examines key federal and state court decisions sculpting the limits of federal and state authority over power.

The final section of this paper examines what makes power unique for purposes of delivering it competitively compared to all other items of

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[13] *See infra* Section III.E.

[14] *See infra* Section IV.

[15] *Id.*

[16] FERC v. Mississippi, 456 U.S. 742, 760–61 (1982).

[17] *Id.* at 761-62.

[18] See *infra* Section V.

[19] *See infra* Section VI.

[20] *Id.*

[21] *See infra* Section V.

[22] Electricity is unique among inventions in that it facilitates the use of seven of the top 50 inventions of all time: The internet, computers, air-conditioning, radio, television, the telephone, and semiconductors. Fallows, *supra* note 1.

commerce in the U.S. economy. From this springboard, we plunge into the expanding pool of competiton and regulation.

II. THE FUNCTION OF POWER AND CHANGES IN MONOPOLY

There has recently been a significant increase in competition in power supply. This has not occurred in a vacuum, but rather through both federal FERC orders at the wholesale level, and decisions in a number of states at the retail level of power supply. The increase in competition is attributable to several factors. One factor is the Public Utility Regulatory Policies Act of 1978 ("PURPA"), which unleashed competitive small power and cogeneration technologies.[23] In addition, pursuant to its interstate and wholesale jurisdiction, the FERC issued several orders,[24] and some states have initiated one or more competitive power initiatives.[25]

With a recent focus on climate change, there is a change in the electric sector's role and the impacts of power usage. In 1949, only 11% of global warming gases in the United States came from the electric sector; as of 2007, this sector is responsible for more than one-third of these gases.[26] "The electric power sector, in comparison to transportation and other sectors, offers the most cost-effective opportunities to reduce CO_2 emissions." [27] Technological changes also have been causative. The price of small-scale modular solar photovoltaic (PV) technology has declined dramatically, and states have adopted policies to facilitate the advancement of more competitive generation distributed on-site, including PV power.[28]

The financial viability of more modular, on-site distributed generation technologies, which can be owned and used by more persons at more locations, changes the landscape. Changes in technology are resulting in dramatic cost reductions for wind and solar photovoltaic distributed generation.[29] The cost to install photovoltaic solar panels has fallen

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[23] 16 U.S.C. § 824, et seq.

[24] *See infra* Section III.

[25] *See infra* Section IV.

[26] *See Historical Data Series: Total Energy-Related Carbon Dioxide Emissions by End-Use Sector and the Electric Power Sector, by Fuel Type, 1949–2007*, U.S. ENERGY INFO. ADMIN. 1 (2007), http://www.eia.doe.gov/oiaf/1605/ggrpt/excel/historical_co2.xls.

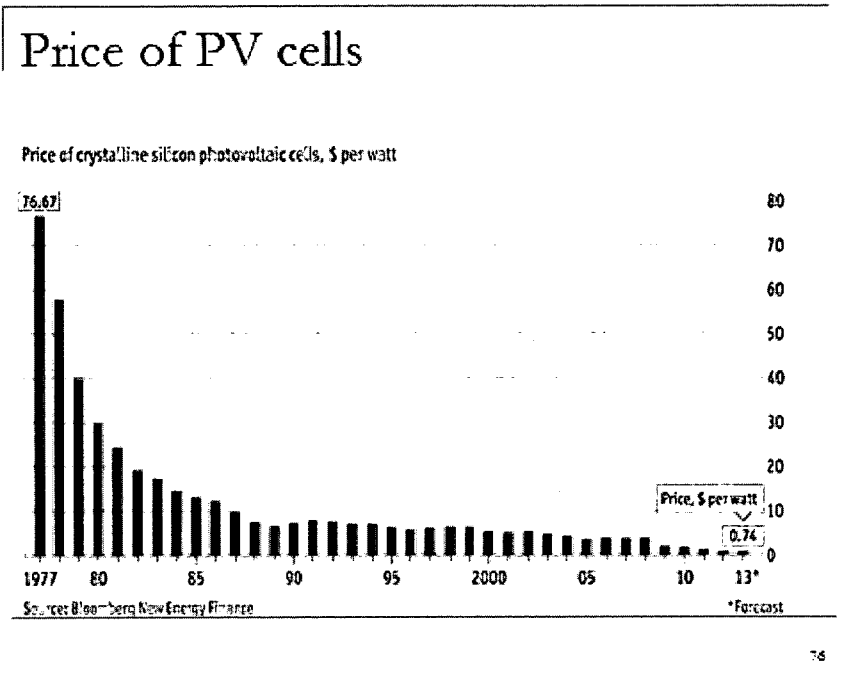
[27] *Energy Estimates Show Rise in CO2 Emissions, Offer Mitigation Options*, CLEAN ENERGY REP. (July 2, 2008), http://cleanenergyreport.com/Energy-EW-Week/Energy-Washington-Week-07/02/2008/energy-estimates-show-rise-in-co2-emissions-offer-mitigation-options/menu-id-570.html.

[28] *Residential Prosumers - Drivers and Policy Options (Re-Prosumers)*, INT'L ENERGY AGENCY, June 2014, at 9.

[29] *Id.* at 9.

dramatically in recent years, lessening by about 60% in "hard" costs.[30] PV module prices have experienced a decline from approximately $1.90/watt in 2009 to $0.70/watt in 2013, and have lowered even further in some regions of the world.[31] See Figure 1.[32] Prices for equipment, such as inverters, which are required for the conversion process that transforms photovoltaic direct current to alternating current, have also declined by more than 60% in cost from $0.60-$1.00+/watt in 2005 to under $0.20/watt in 2013.[33] In the United States, non-hardware "soft" costs for residential systems now account for over 50% of total systems.[34]

Figure 1

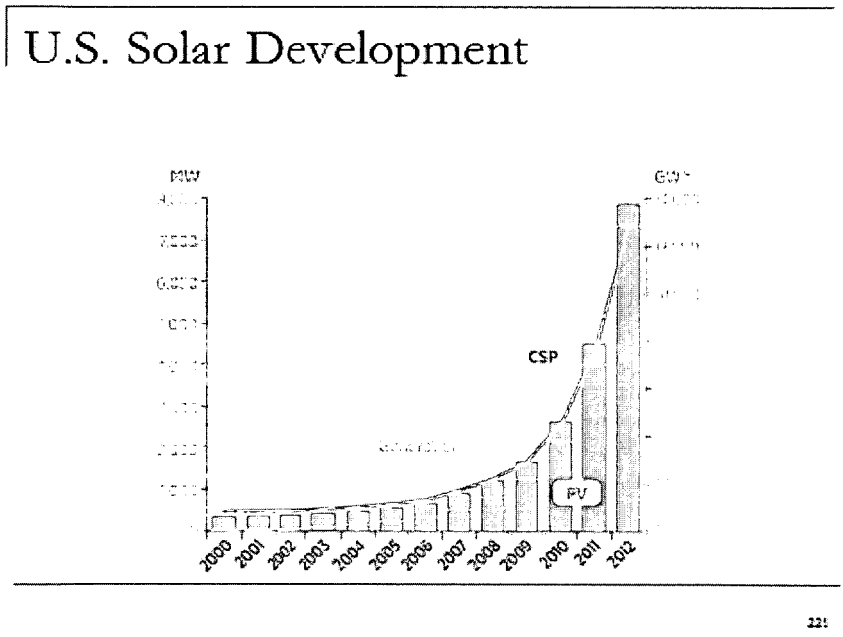


The decrease in the price of photovoltaic cells has allowed the solar photovoltaic markets to grow at an average of more than 40% each year since 2000.[35] Since 2008, the price of photovoltaic panels has fallen by 75%,

[30] *See id.*
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] *Id.* at 72.
[35] *Id.* at 10.

while solar installations have multiplied by 1,000%.[36] See Figure 2.[37] In 2012, there were more than 300,000 "distributed" solar installations throughout the United States, with those instillations taking place in almost all 43 states that utilized net metering credits.[38] By the end of 2013, Americans had installed enough photovoltaic solar energy systems to raise the country's total photovoltaic capacity to more than 12,000 megawatts.[39] In 2013, two-thirds of solar installations in California were structured in a way that allowed homeowners to lease the panels, rather than purchase them.[40]

Figure 2



[36] Ker Than, *As Solar Power Grows, Dispute Flares over U.S. Utility Bills*, NAT'L GEOGRAPHIC (Dec. 24, 2013), http://news.nationalgeographic.com/news/energy/2013/12/131226-utilities-dispute-net-metering-for-solar/.

[37] U.S. Dep't. of Energy, 2012 RENEWABLE ENERGY DATA BOOK, 64 (2012); INT'L ENERGY AGENCY, *supra* note 28, at 11.

[38] Than, *supra* note 36.

[39] Mike Munsell, *U.S. Solar Market Grew 41%, Had Record Year in 2013*, GREENTECH MEDIA (Mar. 7, 2014), http://www.greentechmedia.com/articles/read/u.s.-solar-market-grows-41-has-record-year-in-2013.

[40] Ronald Lehr, *New Utility Business models: Utility and Regulatory Models for the New Era*, 26 ELEC. J. 35, 40 (2013).

The costs involved with renewable energy have declined significantly in recent years, as there is distributed energy competition to conventional power supply, and there is a push to make the grid "smarter."[41] One additional rooftop solar system was being installed every four minutes in 2013 in the United States.[42] This technological change to more distributed on-site power generation is not unprecedented.[43] Before the use of large-scale steam turbines, energy requirements were met through on-site generation.[44] An on-site distributed generation system does not encounter large system electricity losses because the electricity travels a short distance on-site, unless it is exported to the grid.[45] Also, states have adopted policies to facilitate more on-site distributed competitive generation. "As a result of these trends, PV could act as a disruptive technology that challenges the incumbent players in its industry. Many analysts have forecasted that the centralized utility model that has served most of the world for over 100 years could give way to new business operating paradigms."[46]

Much of the innovation responsible for the solar industry's explosive growth has been financial rather than technological.[47] For example, half the United States' solar capacity was installed in 2012.[48] Driving those sales were the many homeowners who opted to install solar systems through a monthly lease that often was cheaper than what they would pay for local utilities.[49] Currently, between 75% and 90% of all solar systems are now leased as a result.[50]

Wind power also enjoyed a substantial increase.[51] See Figure 3.[52] In 2012, wind energy was the most deployed new U.S. electricity generation

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[41] *Id.*

[42] Stephen Lacey, *A Solar System Is Installed in the US Every 4 Minutes*, GREENTECH MEDIA (Aug. 19, 2013), http://www.greentechmedia.com/articles/read/america-installs-a-solar-system-every-four-minutes.

[43] THE POTENTIAL BENEFITS OF DISTRIBUTED GENERATION AND RATE-RELATED ISSUES THAT MAY IMPEDE THEIR EXPANSION, U.S. DEP'T. OF ENERGY (2007).

[44] *Id.*

[45] *See* Shannon Baker-Branstetter, *Distributed Renewable Generation: The Trifecta of Energy Solutions to Curb Carbon Emissions, Reduce Pollutants, and Empower Ratepayers*, 22 VILL. ENVTL. L.J. 1, 3 (2011).

[46] INTERNATIONAL ENERGY AGENCY, *supra* note 28, at 12.

[47] Todd Woody, *The Next Big Innovation in Renewable Energy Won't Be Technological*, THEATLANTIC.COM (Nov. 11, 2013), http://www.theatlantic.com/technology/archive/2013/11/the-next-big-innovation-in-renewable-energy-wont-be-technological/281345/.

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] *U.S. Wind Energy Production and Manufacturing Reaches Record Heights*, U.S. DEP'T. OF ENERGY (Aug. 6, 2013), http://energy.gov/articles/energy-dept-reports-us-wind-energy-production-and-manufacturing-reaches-record-highs.

[52] U.S. Dep't. of Energy, 2012 RENEWABLE ENERGY DATA BOOK, 54 (2012).

capacity, contributing to 43% of all new electric generation.[53] The U.S. Energy Information Administration projects that that U.S. wind power capacity will total more than 77 GW at the end of 2015, constituting 4.6% of total U.S. electricity generation.[54] Since 1999, the Pacific Northwest has had installed more than 7,000 MW of additional wind generating capacity,[55] which is expected to increase to 14,000 MW by 2020.[56] The U.S. Department of Energy calculated that approximately 20% of wind power could be accommodated on the grid, which is about the amount of back-up reserve margin in regional power systems, without requiring additional storage or other mechanisms to accommodate intermittency.[57]

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[53] *Id.*

[54] *See Short-Term Energy and Winter Fuels Outlook*, U.S. ENERGY INFO. ADMIN. (Oct. 6, 2015), http://www.eia.gov/forecasts/steo/report/renew_co2.cfm.

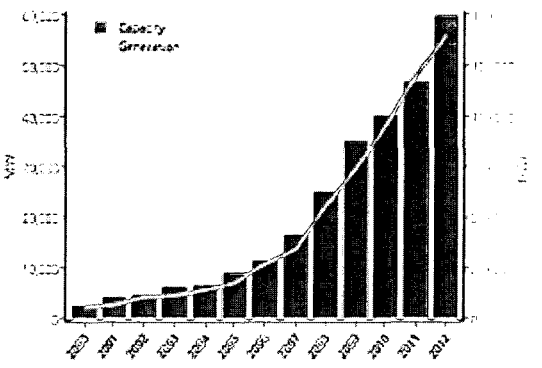
[55] OS-14 – Oversupply Rate Proceeding, BPA.GOV, http://www.bpa.gov/Finance/RateCases/OS-14RateProceeding/Pages/default.aspx (last visited Oct. 18, 2015).

[56] Michael Dotten, *Integrating Wind Energy into Power Planning: Lessons from the Pacific Northwest*, MARTIN LAW (July 21, 2011), http://www.martenlaw.com/newsletter/20110721-wind-energy-power-planning.

[57] J. DeCesaro et al., *Wind Energy and Power System Operations: A Review of Wind Integration Studies to Date*, ELEC. J. 34 (Dec. 2009). Wind, being at off-peak times in many locations, will tend to displace typical coal base-load power, while solar PV units will tend to displace typical on-peak gas-fired peaking generation units.

Figure 3

U.S. Wind Development



Source: National Renewable Energy Lab's 2012 Renewable Energy Data Book

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III. FEDERAL LAW AND REGULATION: GREATER COMPETITION IN POWER

Federal policy has promoted competition in electric generation. At the federal level of regulation, § 205 of the Federal Power Act prohibits utilities from granting any "undue preference or advantage to any person or . . . maintain[ing] any unreasonable difference in rates . . . either as between localities or as between classes of service."[58] The Federal Power Act prohibits terms of service that are unreasonable or unduly preferential as between different classes of customers.[59] The FERC can change a rate or rule it finds unreasonable:[60] "Following a hearing, [FERC] may set aside any rate found 'unjust, unreasonable, unduly discriminatory or preferential,' and replace it with a just and reasonable rate."[61]

Utility rates are designed to recover the cost of each commodity and service provided. Traditionally, both the FERC and state regulators

[58] 16 U.S.C. § 824d(b) (2012).
[59] *Id.*
[60] 16 U.S.C. § 824e(a).
[61] NRG Power Mktg., L.L.C. v. Me. Pub. Utilities Comm'n, 558 U.S. 165, 171 (2010).

assigned only costs that were "just and reasonable" to those who would benefit from the utility investment.[62] Moving electrons follow the law of electro-physics, not 'contract paths.' [63] Therefore, determining who is benefited is more difficult with a larger number of smaller and more diverse independent and distributed generation sources. In an editorial, The Wall Street Journal accused the FERC of "socializing transmissions costs nationwide" in a manner that is " . . . insidious, and arguably unconstitutional."[64]

A. PURPA and Distributed Competitive Generation

Since 1978, the primary incentive for competitive renewable power development has been the Public Utility Regulatory Policies Act of 1978 (PURPA), which is "designed to combat the nationwide energy crisis."[65] Even though PURPA was somewhat restricted by changes in federal law in 2005, its requirement that regulated retail utilities purchase renewable power from competitive Qualifying Facilities (QFs), remains a primary incentive for competitive renewable power development.[66] Under PURPA, if a power generation project satisfies specified legal requirements, it is characterized as a QF and is entitled to regulatory benefits.[67] A QF "produces electric energy solely by the use of biomass, waste, renewable resources, geothermal resources or any combination thereof and is not greater in gross capacity than eighty megawatts unless it also cogenerates power."[68] The Energy Policy Act of 2005[69] added § 210(m) to PURPA, which permits the termination of an electric utility's obligation to purchase energy from QFs if the FERC finds that the QF has nondiscriminatory access to wholesale electric markets.[70]

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[62] *Is FERC Really 'Socializing' Transmission Costs?*, 24 ELEC. J. 1, 5 (March 2011).

[63] *Id.*

[64] Esther Whieldon, *Wellinghoff Blasts Paper's Mischaracterization of Transmission Cost Rule; Calls It 'Very Troubling'*, ELEC. UTIL. WEEK (Nov. 15, 2010) at 11.

[65] FERC v. Mississippi, 456 U.S. 742, 745 (1982).

[66] 16 U.S.C. § 824a-3 (2006).

[67] Steven Ferrey, *Exit Strategy: State Legal Discretion to Environmentally Sculpt the Deregulated Electric Environment*, 26 HARV. ENVTL. L. REV. 109, 136-42 (2002).

[68] 16 U.S.C. § 796 (2015).

[69] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1253 (119 Stat. 594) (codified at 16 U.S.C. § 824a-3 (2006)).

[70] 16 U.S.C. § 210(m)(1). PURPA 210(m)(1) sets out the following criteria for non-discriminatory markets:

> (A)(i) independently administered, auction-based day ahead and real time wholesale markets for the sale of electric energy; and (ii) wholesale markets for long term sales of capacity and electric energy; or

In an effort to reduce United States consumption of fossil fuels and reliance on foreign energy supplies, Congress sought to promote the development of alternative energy sources, including cogeneration and independent small power production.[71] Prior to PURPA, an independent cogenerator or small power producer seeking to interconnect with an electric utility faced at least three primary obstacles:[72]

- Some utilities used their monopoly power to refuse to purchase electric power generated by independent competitive sources, and refused to interconnect with the facility, or offered the QF inadequate prices for a power purchase.[73]
- "[S]ome utilities charged those entities that cogenerated discriminatory rates for supplementary, back-up, and maintenance service."[74]
- "[F]ederal and state laws posed a problem for an interconnected cogenerator or small power producer [QF] in that it could subject itself to plenary public utility regulation, under either the Federal Power Act and/or the Public Utility Holding Company Act."[75]

The purpose of Congress in enacting PURPA § 210 was to eliminate these obstacles.[76]

Electric utilities must offer to sell necessary backup,[77] interruptible,[78] maintenance,[79] or supplemental[80] power to QFs. PURPA requires that

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(B)(i) transmission and interconnection services that are provided by a Commission-approved regional transmission entity and administered pursuant to an open access transmission tariff that affords nondiscriminatory treatment to all customers; and (iii) competitive wholesale markets that provide a meaningful opportunity to sell capacity, including long-term and short-term and real-time sales to buyers other than the utility to which the qualifying facility is interconnected. In determining whether a meaningful opportunity to sell exists, the commission shall consider, among other factors, evidence of transactions within the relevant market; or

(C) wholesale markets for the sale of capacity and electric energy that are, at a minimum, of comparable competitive quality as markets described in subparagraphs (A) and (B).

[71] *See* Ferrey, *supra* note 67, at 129–33.

[72] *See* Steven Ferrey, *Nothing But Net: Renewable Energy and the Environment, MidAmerica Legal Fictions, and Supremacy Doctrine*, 14 DUKE ENVTL. L. & POL'Y F. 1 (2003).

[73] Steven R. Miles, *Full-Avoided Cost Pricing Under the Public Utility Regulatory Policies Act: "Just and Reasonable" to Electric Consumers?*, 69 CORNELL L. REV. 1267, 1267 (1984).

[74] *Id.*

[75] *Id.*

[76] *Id.* at 1268–69.

[77] *See* 18 C.F.R. § 292.101(b)(9) (2015) (Stating that back-up power is electric energy or capacity during an unscheduled outage to supply power and is generally self-generated).

such power sales by an electric utility to a QF be nondiscriminatory as well as "just and reasonable and in the public interest."[81] PURPA specifies that the rates established by the FERC for these purchases may not exceed the "incremental cost" to the utility of purchasing alternative electric energy, the "avoided cost," defined as the cost to the electric utility of the electric energy which, but for the purchase from such QF, such utility would generate or purchase from another source.[82]

B. Federal Tax Incentives

Federal tax policies also support independent competitive entities producing power. This has been done through tax credits and accelerated depreciation.

> The PTC [Federal Production Tax Credit] began in 1992 as an effort to subsidize wind generation development and jump-start the wind industry, offering a subsidy for each kilowatt-hour (kWh) of electricity produced for a plant's first 10 years of operation . . . Starting at 1.5 cents/kWh ($15/MWh), the PTC increased each year with the inflation rate. Before its expiration at the end of 2013, the PTC stood at 2.4 cents/kWh ($24/MWh). On a pre-tax basis, that is equivalent to a subsidy of $35/MWh, greater than the average price of electricity in many wholesale markets in 2013.[83]

"A five-year extension of the production tax credit for wind and other renewable energy sources would cost more than $18.5 billion, according to a Joint Committee on Taxation analysis released by a House Oversight and Government Reform subcommittee."[84] There is nothing atypical about tax

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[78] *See* 18 C.F.R. § 292.101(b)(10) (2015) (Stating that interruptible power is power or capacity supplied by an electric utility to a QF subject to interruption under specific conditions).

[79] *See* 18 C.F.R. § 292.101(b)(11) (2015) (Stating that maintenance power is power or capacity supplied by an electric utility to a QF during periods of scheduled outages).

[80] *See* 18 C.F.R. § 292.101(b)(8) (2015) (Stating that supplementary power is power or capacity supplied by an electric utility to a WF to augment self-generated electricity).

[81] 18 C.F.R. § 292.305(a).

[82] Plymouth Rock Energy Assocs. v. Dep't. of Pub. Utils., 648 N.E.2d 752, 754 (1995).

[83] Jonathan A. Lesser, *Wind Power Subsidies: Today, Tomorrow, Forever?*, PUB. UTIL. FORTNIGHTLY (July 2014), http://www.fortnightly.com/fortnightly/2014/07/wind-power-subsidies.

[84] Ari Natter, *5-Year Extension of Renewable Energy Tax Credit Could Cost $18.5 Billion*, BLOOMBERG BNA ENERGY & CLIMATE REPORT (Oct. 2, 2013) (finding that the analysis also estimated that one-year extension of the 2.3 cent per kilowatt hour tax credit would cost nearly $6.2 billion over a 10-year period).

incentives. World governments subsidize gasoline, electricity and other energy in the amount of $1.9 trillion a year.[85]

The predominate direction of U.S. federal tax incentives has shifted recently from underwriting coal to supporting renewable power, which can be developed at a smaller, more independent modular individual scale.[86] The value of federal tax support for the energy sector was estimated to be $20 billion in 2010 and $24.2 billion in 2012.[87] Of this, approximately one-third ($6.3 billion) was given for tax incentives for the use of renewable fuels.[88] "Another $6.7 billion can be attributed to tax-related incentives supporting various renewable energy technologies,"[89] and targeted tax incentives for the use of fossil energy resources amounted to $2.4 billion.[90] "In 2010, nearly half of the tax incentives for renewables benefitted biofuels,"[91] and "from 2009 onwards, the increased costs associated with incentives for renewable electricity are largely attributable to the Section 1603 grants in lieu of tax credit program."[92]

Figure 4 displays the cost of tax incentives for various fossil fuels and renewable technologies over an almost forty-year period, ending in fiscal year 2015. A recent shift towards offering incentives for renewable power is visible, first occurring during the Bush Administration in 2008.

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[85] *See* Press Release No. 13/93, Int'l Monetary Fund, *IMF Calls for Global Reform of Energy Subsidies: Sees Major Gains for Economic Growth and the Environment* (Mar. 27, 2013), *available at* http://www.imf.org/external/np/sec/pr/2013/pr1393.htm; *see also* Howard Schneider, *IMF, Citing $1.9 Trillion in Government Subsidies, Calls for End to Energy 'Mispricing'*, WASH. POST (Mar. 27, 2013).

[86] I.R.C. § 162 (West 2015).

[87] MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R41953, ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES 6 (2015).

[88] *Id.* at 7–8 tbl.2.

[89] *Id.*

[90] *Id.*

[91] *Id.* at 10 ("Of the estimated $23.3 billion in energy tax provisions in 2013, an estimated $1.6 billion, or 6.9%, went toward supporting biofuels").

[92] *Id.* ("The Section 1603 grant option is not available for projects that began construction after December 31, 2011. However, since grants are paid out when construction is completed and eligible property is placed in service, outlays under the Section 1603 program are expected to continue through 2017. Outlays under the section 1603 grant program are projected to [be $4.1 billion for FY2012]." Under current law, wind property must be placed in service prior to the end of the calendar year 2012 to qualify for the Section 1603 grant. To qualify for the grant, eligible biomass, geothermal energy, landfill gas, trash, hydropower, and marine and hydrokinetic property must be placed in service by the end of 2013).

Figure 4. Projected Annual Cost of Energy-Related Tax Incentives[93]
Fiscal year1977– fiscal year 2015

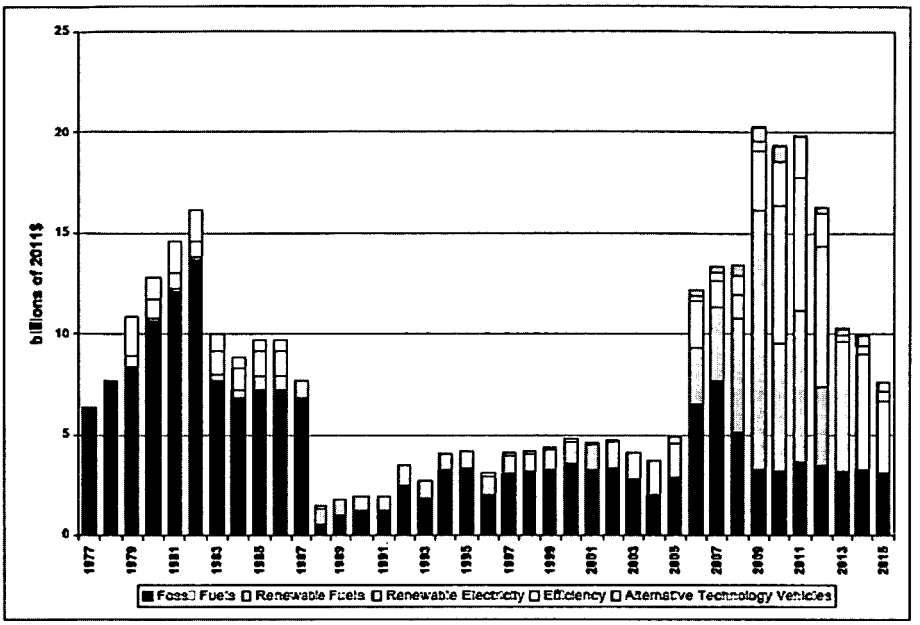

Table 1 displays the estimated revenue cost of various federal energy tax incentives in recent years.[94] Renewable energy, which can be independently and competitively developed, has dominated fossil fuel tax incentives for the past five years.[95] The analysis presented in these tables highlights only energy subsidies provided through the tax code, and does not examine direct or indirect energy subsidies.[96] Although 44.9% of generation in 2010 can be attributed to coal, coal received an estimated 10% of tax incentives.[97]

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[93] *Id.* at 11.

[94] *Id.* at 7 (displaying Joint Committee on Taxation and Department of the Treasury data).

[95] *Id.*

[96] *Id.* at 14 (contrasting U.S. Energy Information Agency (EIA) studies, this includes Section 1603 grants in the place of tax credits as a tax-related provision. The EIA lists the Section 1603 grants in place "of tax credits as a direct expenditure.").

[97] *Id.* (comparing similarity of data to the EIA's data for 2007, "where 47.6% of generation was attributable to coal, while coal received 12.7% of the total federal financial support for electricity production."); *see also id.* at 8.

Table 1.[98] *Estimated Revenue Cost of Energy Tax Provisions: Fiscal Years 2010 through 2012*

(Dollar value in billions)

Provision	2010	2011	2012
Fossil Fuels			
Expensing of Exploration and Development Costs for Oil and Gas	0.7	0.8	0.8
Percentage Depletion for Oil and Gas	0.5	0.9	0.9
Amortization of Geological and Geophysical Costs for Oil and Gas Exploration	0.1	0.1	0.1
Fifteen-year Depreciation for Natural Gas Distribution Lines	0.1	0.1	0.1
Election to Expense fifty percent of Qualified Refinery Costs	0.7	0.8	0.7
Amortization of Air Pollution Control Facilities	0.1	0.2	0.2
Credits for Investments in Clean Coal Facilities	0.2	0.2	0.2
Excise Tax Credits for Alternative Fuel Mixtures	N/A[99]	0.2	0.2

[98] *Id.* at 6–7 tbl.2.

[99] *Id.* at 8 tbl.2 ("An n.a. indicates that the provision was not listed in the 2010 tax expenditure tables.").

Provision	2010	2011	2012
Subtotal, Fossil Fuels	*2.4*	*3.3*	*3.2*
Renewables			
Production Tax Credit (PTC)	1.4	1.4	1.6
Investment Tax Credit (ITC)	(i)[100]	0.5	0.5
Accelerated Depreciation for Renewable Energy Property	0.3	0.3	0.3

Table 2 summarizes and contrasts energy production and energy tax incentives.[101] The analysis presented in these tables highlights only energy subsidies provided through the tax code, and does not examine direct or indirect energy subsidies.[102]

Table 2. Comparing Energy Production and Energy Tax Incentives: Fossil Fuels and Renewables, 2010[103]

	Production		Tax Incentives	
	Quadrillion Btu	Dollar % of Total	Billions of Dollars	Dollar % of Total
Fossil Fuels	58.5	78.0%	$2.4	12.6%
Renewables Power	8.1	10.7%	$13.0	68.1%
Renewables (excluding hydro-electric)	5.6	7.4%	$13.0	68.1%
Renewables (excluding	6.2	8.3%	$6.7	35.1%

[100] *Id.* ("(i) indicates a positive estimated revenue loss of less than $50 million.").

[101] *Id.* at 7-8 tbl.2.

[102] *Id.* at 14 (including, in contrast to U.S. Energy Information Agency (EIA) studies, Section 1603 grants in the place of tax credits as a tax-related provision. The EIA lists the Section 1603 grants in place "of tax credits as a direct expenditure.").

[103] *Id.* at 8–9 tbl.3.

biofuels and related tax incentives)				
Renewables (excluding hydro-electric and biofuels and related tax incentives)	3.7	4.9%	$6.7	35.1%

Table 3 presents subsidies to electricity production by fuel type.[104] Again, as of 2010 date, fossil fuels receive a much smaller percentage allocation than their share of electric production.[105] Correspondingly, renewable sources, often competitively and independently developed, receive a much larger portion than their share of electric production.[106]

Table 3. Subsidies to Electricity Production by Fuel Type, 2010
(Dollar values in millions)

	Production		**Federal Financial Incentives**		
Fuel Type	**FY2010 Net Generation (billion kWh)**	**% of Total**	**Tax Subsidies**	**Other Subsidies**	**% of Total**
Coal	1,851	44.9 %	486	703	10.0 %
Natural Gas and Petroleum Liquids	1,030	25.0 %	583	72	5.5%
Nuclear	807	19.6 %	908	1,591	21.0 %
Renewables	425	10.3 %	1,347	5,212	55.3 %

[104] *Id.* at 15 tbl.4 (showing data from the EIA).
[105] *See id.*
[106] *Id.*

Biomass	57	1.4%	54	61	1.0%
Geothermal	16	0.4%	1	199	1.7%
Hydropower	257	6.2%	17	198	1.8%
Solar	1	0.0%	99	869	8.2%
Wind	95	2.3%	1,178	3,808	42.0%
Transmission and Distribution	(i)	(i)	58	924	8.2%
Total	**4,091**	**100%**	**3,382**	**8,502**	**100%**

In the past seven years, there have been substantial U.S. federal tax incentives for renewable energy development.[107] The fossil fuels-related tax incentives are estimated by the Congressional Research Service to reduce federal tax revenues by $20.6 billion between 2013 and 2017; during the same period "the total cost of tax-related provisions supporting the production of renewable energy (tax expenditures and grants designed to replace tax expenditures) is estimated to be $39.6 billion."[108] However, the states have put forth significant efforts to promote competitive, often independent, renewable energy.[109]

C. Federal Energy Orders Mandate Greater Competition

Over two decades, the FERC has promulgated new rules promoting competition in wholesale markets and power transmission. The FERC has no authority "over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric

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[107] *Id.*

[108] MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R43206, ENERGY TAX POLICY: ISSUES IN THE 113TH CONGRESS, 14-15 (2013) ("Of this total [for renewable energy], $17.2 billion is for outlays under the Section 1603 grants in lieu of tax credits program. Thus, the cost of tax expenditure and excise tax incentives for renewables is estimated to be $22.4 billion between 2013 and 2017. Historically, the primary tax incentive for renewable electricity has been the production tax credit (PTC). The American Recovery and Reinvestment Act . . . substantially modified this incentive, allowing projects eligible for the renewable PTC or investment tax credit (ITC) to claim a one-time grant in lieu of the tax credits.").

[109] *See infra* pp. 44-52.

energy in intrastate commerce."[110] Below, five key competitive initiatives of the FERC, upheld by the federal courts, are highlighted.

1. FERC Order 888: Competition in Power Transmission

In Order No. 888,[111] the Commission established the foundation for the development of competitive bulk power markets: non-discriminatory open access transmission service by electric utilities.[112] All regulated public utilities that own, control, or operate jurisdictional transmission facilities are required by FERC Order 888 to have open access transmission tariffs.[113] The purpose is to eliminate undue discrimination/preference in moving power and promote competition.[114] An individual tariff must track the FERC-mandated *pro forma* open access transmission tariff, unless a waiver has been granted by the FERC.[115] The *pro forma* tariff requires that the transmission provider plan and construct additional transmission facilities so as to be able to serve network customers "on a basis comparable to the Transmission Provider's delivery of its own generating and purchased resources to its Native Load Customers."[116]

In FERC Order 888, the FERC imposed requirements on regulated utilities to (1) separate transmissions from wholesale power functions and (2) take transmissions under an open access transmission tariff ("OATT") on a nondiscriminatory basis.[117] The FERC promulgated a revised *pro forma* OATT in Order 888-A, providing an incumbent customer with a right of first refusal (ROFR) to match the duration offered by a new customer at a full OATT rate.[118]

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[110] 16 U.S.C. § 824(b)(1) (2015).

[111] Order No. 888, Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. 21,540, 21,552 (May 10, 1996) (codified at 18 C.F.R. pt. 35, 385).

[112] *Id.*

[113] 18 C.F.R. § 35.28(a), (c) (2015).

[114] Order No. 888, Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. at 21,718.

[115] 18 C.F.R. § 35.28(c), (v) (2015).

[116] Order No. 888, Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. at 21,718.

[117] Order No. 888, *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities, Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, 75 F.E.R.C. ¶ 61,080, at 61,238 (1996).

[118] Idaho Power Co. v. FERC, 312 F.3d 454, 457 (D.C. Cir. 2003) (reversing the FERC Order forcing Idaho Power Co. to continue to supply power to an incumbent customer at the end of its contract term even though a merchant customer had offered a more attractive contract term) (holding

While the FERC encouraged joint planning with customers and other utilities, and also regional planning, the FERC did not mandate such planning.[119] Not just third-party customers, but the public utilities themselves, and their subsidiaries, must take transmission service pursuant to this uniform tariff. Non-public utilities may have "reciprocity" open access transmission tariffs.[120]

2. *FERC Order No. 890: Elimination of Discrimination and Preference*

In Order 890,[121] the Commission amended the Order 888 *pro forma* tariff to require transmission providers to plan for the needs of their customers on a basis comparable to planning for their own needs.[122] FERC Orders 890 and 890-A sought to make improvements to its *pro forma* open access transmission tariff, and better achieve the goal of eliminating undue discrimination/preference in transmission service. The Commission deemed it critical that transmission providers improve their transmission planning processes to remedy the potential for undue discrimination, and to facilitate a more transparent and coordinated process open to customers, competitors, and state regulators. To better ensure that planning and construction occur in a non-unduly discriminatory and competitive manner, Orders 890 and 890-A mandated coordinated, open, and transparent transmission planning on a local and regional level.[123] In Order

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that an incumbent must match a new potential customer's superior offer, interpreting right of first refusal as a right to match the terms of a third party's highest offer).

[119] Order No. 890, Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. 12,266, 12,317 (Mar. 15, 2007) (codified at 18 C.F.R. pt. 35, 385).

[120] 18 C.F.R. § 35.28(a), (e) (2015) (specifying that "Reciprocity" provides a so-called safe harbor, ensuring that the non-public utility is entitled to transmission service from public entities).

[121] Order No. 890, Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. at 12,266.

[122] N.Y. Reg'l Interconnect, Inc. v. FERC, 634 F.3d 581, 584 (D.C. Cir. 2011); Order No. 890, Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. at 12,320.

[123] FERC explained that in light of a decline in investment relative to load growth resulting in increased congestion and a reduced access to alternative sources of energy, as well as a disincentive to remedy congestion on a non-unduly discriminatory basis, reform of the Order No. 888 and 888-A pro forma tariff was needed. In Order No. 890-A, the Commission explained:

> The Commission identified nine planning principles in Order No. 890 that must be satisfied for a transmission provider's planning process to be considered compliant with that order. These nine planning principles are:
>
> (1) Coordination–the process for consulting with transmission customers and neighboring transmission providers;
>
> (2) Openness–planning meetings must be open to all affected parties;
>
> (3) Transparency–access must be provided to the methodology, criteria, and processes used to develop transmission plans;
>
> (4) Information Exchange–the obligations of and methods for customers to submit data to transmission providers must be described;

2000,[124] the Commission encouraged the development of Regional Transmission Organizations to form "competitive wholesale electric markets"[125] which were required to incorporate non-discriminatory transmission service.[126]

3. *FERC Order 719: Efficiency Competes with Power Generation*

To encourage more fair competition for demand-response measures competing with power generation, in Orders 719 and 719-A, the FERC adopted changes in demand-response and use of market pricing to elicit demand response during periods of operating reserve shortages, long-term power contracting, market monitoring, and responsiveness of the organized wholesale electric markets to their customers and other stakeholders.[127]

4. *FERC Order 764: Scheduling Intermittent Renewable Power*

New intermittent wind and solar renewable resources cannot reliably supply base load power, as they demonstrate a relatively low availability factor in the 10-40% range of hours during a week or month.[128] Wind generators have plant effective capacity factors of 40-43% on average.[129] Under FERC Order 888, generators who needed access to transmission

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(5) Comparability–transmission plans must meet the specific service requests of transmission customers and otherwise treat similarly-situated customers (e.g., network and retail native load) comparably in transmission system planning;

(6) Dispute Resolution–an alternative dispute resolution process to address both procedural and substantive planning issues must be included;

(7) Regional Participation–there must be a process for coordinating with interconnected systems;

(8) Economic Planning Studies–study procedures must be provided for economic upgrades to address congestion or the integration of new resources, both locally and regionally; and

(9) Cost Allocation–a process must be included for allocating costs of new facilities that do not fit under existing rate structures, such as regional projects.

Order No. 890-A, *Preventing Undue Discrimination and Preference in Transmission Service*, 121 F.E.R.C. ¶ 61,297 (2007).

[124] *Guidance on Regional Transmission Organization and Independent System Operator Filing Requirements under the Federal Power Act*, 104 F.E.R.C. ¶ 61,248 (2003).

[125] Me. Pub. Utils. Comm'n v. FERC, 454 F.3d 278, 280-81 (D.C. Cir. 2006).

[126] *See* 18 C.F.R. § 35.34(k)(7) (2015).

[127] 18 C.F.R. part 35.

[128] *See* INDEPENDENT POWER, *supra* note 5, § 2:11 (noting inability of intermittent sources to serve as base-load resource).

[129] Zachary Shahan, *Wind Turbine Net Capacity Factor – 50% the New Normal?*, CLEAN TECHNICA (July 27, 2012), www.cleantechnica.com/2012/07/27/wind-turbine-net-capacity-factor-50-the-new-normal/.

additions had to pre-fund those additions subject to reimbursement by those transmission customers who later used the new facilities, which were typically utilities, pursuant to Open Access Transmission Tariffs filed by transmission providers.[130] Generators had to pay the peak level of transmission required to carry the generator's load.

Prior to FERC Order 764, hourly scheduling of resources for transmission service was the norm. Wind generators had difficulty meeting hourly schedules because of significant variations in generation output within an hour time period, which resulted from wind velocity changes.[131]

In its Order 764, the FERC required that every transmission customer be given the ability to adjust its schedule at 15-minute intervals to reflect changing conditions.[132] The FERC now treats transmission systems as integrated networks with widely dispersed benefits. In amending 18 CFR Part 35 in Order No. 764,[133] the Federal Energy Regulatory Commission concluded: "[c]hanges in the generation mix and underlying public policies influencing investment in VER generation have accentuated the need to reform existing practices that unduly discriminate against VERs or otherwise impair the ability of public utility transmission providers and their customers to manage costs associated with VER integration effectively." FERC Order 764 requires that interconnecting DG generators pay for any incremental generation required, subject to reimbursement for generators who later interconnect to the increased transmission capacity. This promotes competition by supporting intermittent independent wind and solar technologies.

Techniques that would integrate large amounts of variable generation into the power system [134] include faster generator dispatch and scheduling,[135] and larger load balancing areas.[136] Most transmission

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[130] *See* Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities, Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 75 F.E.R.C. 61,080 (1996); *see also* 78 F.E.R.C. 61,220 (1997), 81 F.E.R.C. 61,248 (1997), 82 F.E.R.C. 61,046 (1998).

[131] Michael Dotten, *New Developments Integrating Wind and Solar Power into the Power Grid*, MARTEN LAW (Apr. 14, 2014), http://www.martenlaw.com/newsletter/20140415-integrating-wind-solar-power-grid ("[W]ind generators' plant factors on [the Bonneville Power Administration] system averaged 27.1%, but the generator, under the old standards, had to pay the peak level of transmission required to carry the generator's load.").

[132] Order No. 764, 18 CFR Part 35 Integration of Variable Energy Resources, 139 F.E.R.C. ¶ 61,246, 2012 FERC LEXIS 1160, *4 (2012).

[133] *Id.* at *24.

[134] *See* M. Milligan & B. Kirby, *Impact of Balancing Areas Size, Obligation Sharing, and Ramping Capability on Wind Integration* 38-39 (Nat'l Renewable Energy Lab., Conference Paper No. NREL/CP-500-41809, 2007), *available at* http://www.nrel.gov/docs/fy07osti/41809.pdf.

[135] ENERNEX CORP., AVISTA CORPORATION WIND INTEGRATION STUDY (March 2007), *available at* http://www.uwig.org/avistawindintegrationstudy.pdf (finding that sub-hourly scheduling

providers with significant amounts of wind energy on their systems conduct a centralized wind energy forecast. MISO, PJM, ERCOT, NYISO, and CAISO have implemented centralized wind energy forecasting, as has Southern California Edison.[137]

5. *FERC Order 1000: Transmission Rights of First Refusal*

The FERC approves all RTO and Independent System Operator (ISO) terms of service and all financial tariffs.[138] FERC Order No. 1000 creates obligations for transmission owners to engage in regional and interregional transmission planning.[139] FERC Order 1000 requires incumbent transmission providers, utilities, and the RTOs which manage regional multi-state transmission access to the grid, to remove rights-of-first-refusal (ROFRs) from FERC-approved transmission tariffs.[140] The FERC found that Order 1000 reforms were required to reflect new industry developments and "to address remaining deficiencies in transmission, planning, and cost allocation processes so that the transmission grid can better support wholesale power markets . . . ."[141]

To promulgate greater competition in ownership of traditionally monopolized transmission facilities, FERC Order 1000 requires incumbent transmission providers to remove rights of first refusal from Commission-approved tariffs.[142] The FERC noted that a non-incumbent transmission developer might lose the opportunity to construct its proposed transmission project to the incumbent transmission owner under

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would greatly reduce variable energy resources (VER) integration costs and faster (sub-hourly) power system dispatch and scheduling would allow system operators to more quickly and efficiently respond to power system output variations. The study similarly found that wind integration costs would be reduced by 40-60 percent by moving from hourly to sub-hourly dispatch intervals).

[136] Statement, Integrating Renewable Resources Into The Wholesale Electric Grid, FERC Docket No. AD09-4-000 (Mar. 2, 2009) (arguing for greater cooperation or even consolidation among the roughly 125 existing balancing areas, as variable energy integration costs are greatly reduced if wind resources are geographically diverse as opposed to being concentrated in a small area and developing regional load following and ancillary services markets would also alleviate an individual balancing area's burden to provide all ancillary services from its own resources).

[137] Audun Botterud & Jianhui Wang, *Wind Power Forecasting in U.S. Electricity Markets*, 23 ELEC. J. 71, 75-76 (April 2010).

[138] NEW RULES, *supra* note 5, at 49-50.

[139] Order No. 1000, *18 CFR Part 35 Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, 136 F.E.R.C. ¶ 61,051 (2011); *see also* Rishi Garg, *What's Best for the States: A Federally Imposed Competitive Solicitation Model or a Preference for the Incumbent? State Adoption of Right of First Refusal Statutes in Response to FERC Order 1000 and the Dormant Commerce Clause* (Nat'l Regulatory Research Inst., Briefing Paper No. 13-04, Apr. 2013) *available at* http://www.illinoisjltp.com/sources/Ferrey/115_Rishi%20Garg,%20%20Whats%20Best%20f.pdf.

[140] *Id.*

[141] *Id.* ¶ 99.

[142] *Id.* ¶ 227.

a federal ROFR to construct any transmission facility in its service territory.[143] The FERC's authority applies to public utility transmission provider tariffs and agreements subject to FERC jurisdiction.[144]

The FERC stated that nothing in Order 1000 is intended to limit or affect state or local laws or regulations with respect to the construction of transmission development.[145] The FERC lacks jurisdiction over the siting, construction, and ownership of transmission facilities, which are exclusively within state jurisdiction.[146] FERC case law exerts exclusive jurisdiction over the "transmission of electric energy in interstate commerce," and over "all facilities for such transmission or sale of electric energy."[147]

On appeal in 2014, the D.C. Circuit Court of Appeals unanimously rejected challenges to FERC's Order 1000 as "unpersuasive," in response to allegations that the order would harm system reliability.[148] Petitioners argued that the FERC unlawfully deprived them of their rights of first refusal without first making the finding required by law to rebut the *Mobile-Sierra* presumption,[149] which presumes that freely negotiated wholesale energy contracts are "just and reasonable" unless found by the FERC to seriously harm the public interest.[150] The court disagreed, noting that the FERC would hear the petitioners' *Mobile-Sierra* arguments when it reviewed the actual tariffs, the filing of which are required to comply with Order 1000.[151] The court declared that the FERC properly addressed reliability concerns by maintaining ROFRs for projects that would be located entirely within a utility's service territory, and thus would not be subject to regional cost allocation.[152] The court held that the FERC had sufficient authority under § 206 of the Federal Power Act to require removal of federal rights-of-first-refusal provisions from federally mandated transmission tariffs "upon determining they were unjust and

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[143] Notice of Request for Comments, Transmission Planning Processes Under Order No. 890, Docket No. AD09-8-000, at 12 (Oct. 8, 2009).

[144] *See* Order No. 1000, *supra* note 139, ¶ 287.

[145] *Id.* (pertaining only to Commission-jurisdictional tariffs or agreements and does not require removal of references to such state or local laws or regulations from Commission-approved tariffs or agreements).

[146] Piedmont Envtl. Council v. FERC, 558 F.3d 304 (4th Cir. 2009).

[147] Steven Ferrey, *The Double Helix of Supremacy and Commerce Clause Constitutional Restraints Encircling the New Energy Frontier*, 7 NW. INTERDISC. L. REV. 1, 17 (2014) (citing 16 USC §§ 824(a)-(b)(1)).

[148] S.C. Pub. Serv. Auth. v. FERC, 762 F.3d 41, 48 (D.C. Cir. 2014).

[149] *Id.* at 81.

[150] *Id.* at 76.

[151] *Id.* at 81.

[152] *Id.* at 48.

unreasonable practices affecting rates."[153]

The challengers claimed that there was only a tenuous relationship, or "affect," between the incumbent utilities' monopolies and resultant rates.[154] As a result, the FERC lacked authority to remove ROFRs under § 206, which limits the FERC's authority to practices "affecting" a rate.[155] The court found the petitioners' argument "unconvincing," concluding that § 206 does not "unambiguously" limit the commission's authority, further stating "[w]e think that the commission's reading of § 206 is reasonable. Petitioners give us no persuasive reason to think otherwise.... The challenged orders take great pains to avoid intrusion on the traditional role of the states."[156]

The circuit court rejected challenges that the FERC's ROFR removal requirement violated the *Mobile-Sierra* doctrine.[157] The court found that the FERC could require transmission providers to participate in regional planning, which allocates costs of new transmission facilities proportionately based on forecasted benefits.[158] The court also found there was "substantial evidence of a theoretical threat to support adoption of the reforms" in Order 1000.[159]

Despite upholding FERC 1000, the competition it creates has yielded interesting results when implemented by the states pursuant to federal order. The transmission system within the Electric Reliability Council of Texas (ERCOT) is isolated from any interstate commerce and is therefore

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[153] *Id.* at 48-49.

[154] *Id.* at 74.

[155] *Id.*

[156] *Id.* at 76.

[157] *Id.* at 74-75 ("The relationship between rights of first refusal and rates is far more direct than the relationship between corporate governance and rates. Nothing suggests that replacing the members of a board will necessarily affect rates . . . The challenged orders here provide what was lacking in *CAISO*: an economic principle that directly ties the practice the Commission sought to regulate to rates." (citation omitted)).

[158] *Id.* at 48. FERC Order 890 requires the development of mandatory regional cost allocation rules by which the beneficiaries of transmission projects throughout the region are identified and required to pay for the cost of the expansion in a manner roughly commensurate with the benefits. The commission justified Order 1000 on the "theoretical threat" that "the narrow focus of current planning requirements and shortcomings of current cost allocation practices create an environment that fails to promote the more efficient and cost-effective development of new transmission facilities" *Id.* at 64. FERC "reasonably determined that regional planning must include consideration of transmission needs driven by public-policy requirements [and] . . . reasonably relied upon the reciprocity condition to encourage non-public utility transmission providers to participate in a regional planning process. *Id.* at 49.... [E]ven in a naturally monopolistic market the threat of competitive entry (e.g., through competitive bidding) will lead firms to lower their costs, which thereby generally lowers cost-based utility rates." *Id.* at 69.

[159] *Id.*

not subject to Order 1000 requirements.[160] Nonetheless, the ERCOT used competitive transmission system bids for new lines, with both utility and independent companies winning.[161] Two early examples of competition have yielded mixed results. In both cases, competitive bids for transmission contracts resulted in the incumbent utility being chosen over the independent bidder, even when the incumbent's bid was not the lowest price.[162] In California, the incumbent utility was chosen not because it offered the lowest cost, but because the California independent system operator (ISO) determined that there were experiential, legal siting, and permitting advantages with the incumbent's legal team.[163] On the East coast, in PJM, who was the largest U.S. ISO among various bidders, the incumbent utility bid was chosen because it owned the existing rights-of-way to be used in the development of the transmission line, even though its bid was more than double the lowest bid.[164]

D. Federal Court Preemption of Certain Unauthorized State Energy Regulation

The federal courts have supported FERC regulation in most regards, and preempted state regulation in these fields of energy, especially where it reaches a contrary result. Set forth below is the legal structure for energy preemption under the Supremacy Clause of the United States Constitution, the Federal Power Act, and key federal court determinations.

1. The Preemption of State Regulation

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[160] Elec. Light & Power/Powergrid Int'l, *FERC Order 1000 Changes Competitive Landscape of Transmission Owners*, ELEC. LIGHT & POWER (Sept. 3, 2014), http://www.elp.com/articles/2014/09/ferc-order-1000-changes-competitive-landscape-of-transmission-owners.html.

[161] *Id.*

[162] *See id.*

[163] *Id.* ("The California Independent System Operator (CAISO) put a 59-mile, 230 kV Gates-Gregg transmission line up for competitive bid in 2013 . . . [Among bidders, the ISO selected the incumbent joint venture between Pacific Gas & Electric Co. and MidAmerican Transmission] because of its significant experience developing and operating transmission projects as well as knowledge of the siting and permitting requirements in California. CAISO stated it would be more costly and time consuming . . . to obtain the rights-of-way . . . .").

[164] *Id.* (stating that in the 2012 Artificial Island request for proposal, there were twenty-six proposals submitted by eight different transmission developers, including incumbent and non-incumbent utilities as well as independent investment groups, and the selected winner was a joint venture between Dominion Resources and incumbent Public Service Electric and Gas Company, which at nearly $250 million far exceeded the low bid of $100 million. The incumbent held the existing rights-of-way to be used in the development of the transmission line but after criticism of favoritism, PJM temporarily suspended the process).

According to a long-standing and consistent line of rulings by the U.S. Supreme Court, when a transaction is subject to exclusive federal FERC jurisdiction and regulation, state regulation is preempted by federal law, falling under the purview of the Supremacy Clause of the United States Constitution.[165] As stated by Justice Scalia, "[i]t is common ground that if FERC has jurisdiction over a subject, the States cannot have jurisdiction over the same subject."[166]

The Federal Power Act, §§ 205 and 206,[167] empower the FERC to exclusively regulate rates for the interstate and wholesale sale and transmission of electricity.[168] The U.S. Supreme Court held that Congress meant to draw a "bright line," easily ascertained and not requiring case-by-case analysis between state and federal jurisdiction.[169]

The rates, terms, and provisions of any wholesale sale or transmission of electricity in interstate commerce are exclusively within federal jurisdiction and control, not state authority. Under the Federal Power Act, FERC has "exclusive authority to regulate the transmission and sale at wholesale of electric energy in interstate commerce, without regard to the source of production."[170] Generally speaking, "if Congress evidences an intent to occupy a given field, any state law falling within that field is preempted."[171]

2. *Federal Authority over Transmission Terms and Costs*

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[165] New England Power Co. v. New Hampshire, 455 U.S. 331 (1982) (overturning an order of the New Hampshire Public Utilities Commission that restrained within the state, for the financial advantage of in-state ratepayers, low-cost hydroelectric energy produced within the state, as an impermissible violation of section 8, clause 3, and the Federal Power Act); Montana-Dakota Utils. Co. v. Nw. Pub. Serv. Co., 341 U.S. 246, 251 (1951); Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953 (1986); Miss. Power & Light Co. v. Miss. *ex rel.* Moore, 487 U.S. 354 (1988); Entergy La., Inc. v. La. Pub. Serv. Comm'n, 539 U.S. 39 (2003).

[166] *Miss. Power & Light Co.*, 487 U.S. at 377 (Scalia, J., concurring).

[167] 16 U.S.C. §§ 824d–824e (2015).

[168] 16 U.S.C. § 824(a) (2015).

[169] Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 215–16 (1964).

[170] *New England Power Co.*, 455 U.S. at 340; *see also Nantahala Power & Light Co.*, 476 U.S. at 956 (the Commission "has exclusive jurisdiction over interstate wholesale power rates."); *see also* Utilimax.com v. PPL Energy Plus L.L.C., 378 F.3d 303, 305 (3d Cir. 2004) (finding that the Third Circuit has similarly argues that the "wholesale market for electrical energy is regulated by [the Commission]" and "[o]ne of [the Commission's] duties is to set 'just and reasonable' wholesale electric rates.").

[171] Silkwood v. Kerr-McGee Corp., 464 U.S. 238, 248 (1984); *see also* Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 212 (1983).

Transmission costs are allocated within an ISO region either by electricity demand or by a percentage in each state (on a kWh basis).[172] New transmission to strengthen the grid, and for renewable power deployment, could cost $100 billion.[173] The Brattle Group estimates that it may take as much as $1.5 trillion to update the grid by 2030.[174] As the Supreme Court has noted, it is now "possible for a customer in Vermont [to] purchase electricity from an environmentally friendly power producer in California or a cogeneration facility in Oklahoma."[175] And since power is only usable when delivered to users over a copper wire network, movement and transmission of power in this way is the key connection.[176]

In *Illinois Commerce Commission v. FERC*, the FERC sought to impose a tariff primarily intended to finance the installation of new lines that would transmit "electricity generated by remote wind farms."[177] The tariff was challenged unsuccessfully as a subsidy for wind power producers, and allowed to stand as ordered by FERC.[178] Justice Richard Posner, speaking for the Seventh Circuit Court of Appeals, affirmed the FERC's approval of the Midwest Independent Service Operator's (MISO)[179] proportionate customer utility allocation of transmission costs for high-voltage transmission lines to move renewable wind power to populated areas.[180] With regard to the holding on the respective jurisdiction of state and federal government to regulate electricity, the court relied upon a law

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[172] Bob Bibbo, Normandeau Assocs., Presentation at the Northeast Energy and Commerce Association (NECA) Conference on Environmental Issues: Permitting Linear Grid Assets (July 24, 2014).

[173] *See* Nuel Navarrete, *U.S. Grid Needs $100 Billion for Renewable Energy Capability*, ECOSEED (Oct. 15, 2010 5:39 AM), http://ecoseed.org/business/14092-u-s-grid-needs-100-billion-for-renewable-energy-capability.

[174] U.S. DEP'T. OF ENERGY, SMART GRID SYSTEM REPORT, viii (July 2009) (citing MARC W. CHUPKA, ET AL., TRANSFORMING AMERICA'S POWER INDUSTRY: THE INVESTMENT CHALLENGE 2010-2030 (2008), *available at* http://www.edisonfoundation.net/iei/Documents/Transforming_Americas_Power_Industry.pdf).

[175] New York v. FERC, 535 U.S. 1, 8 (2002) (internal quotation marks omitted).

[176] Self-generated distributed power does not require connection to the integrated network, but this exception is not the subject of this article. *See* Steven Ferrey, *Exit Strategy: State Legal Discretion to Environmentally Sculpt the Deregulating Electric Environment*, 26 HARV.ENVTL. L. REV. 109 (2002), for more on such distributed generated options.

[177] *See* Ill. Commerce Comm'n v. FERC, 721 F.3d 764, 771 (7th Cir. 2013).

[178] *Id.* at 781.

[179] MISO, CORPORATE INFORMATION 1-2 (2014), *available at* http://perma.cc/75L9-GV74 (MISO's service area extends from the Canadian border, then east to Michigan and parts of Indiana, south to northern Missouri, and west to eastern areas of Montana).

[180] *See Ill. Commerce Comm'n*, 721 F.3d at 764 (stating that MISO allocated the costs of the transmission projects among all of the utilities that draw power from the MISO grid in proportion to each utility's overall volume of usage, and FERC approved MISO's rate design, which led some states to initiate court appeal).

review article on Constitutional energy issues authored by Professor Steven Ferrey.[181]

3. Federal Agencies Determine their own Jurisdictional Reach

In terms of the federal-state dichotomy in the exercise of administrative legal jurisdiction, federal agencies were recently given more discretion to determine the scope of their own authority. In the 2013 Supreme Court decision *Arlington v. FCC,* the majority held that *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, applies to an agency's interpretation of the scope of its own statutory jurisdiction: "statutory ambiguities will be resolved, within the bounds of reasonable interpretation, not by the courts but by the administering agency."[182] There is no difference between deference afforded to the agency by an agency's "jurisdictional" or "non-jurisdictional" interpretations:[183] [if] "the agency's answer is based on a permissible construction of the statute, that is the end of the matter."[184]

In 2014, in a separate 6-2 opinion, the Supreme Court held that federal agencies are entitled to deference to agency discretion in devising regulations, as per *Chevron.*[185] This overruled a determination that federal rules did not defer sufficiently to state implementation.[186]

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[181] *Id.* (citing Steven Ferrey, *Threading the Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power*, 7 TEX. J. GAS & ENERGY L. 59, 69, 106-07 (2011-2012)).

[182] City of Arlington v. FCC, 133 S. Ct. 1863, 1868 (2013) (citing Chevron v. Natural Res. Def. Council, 467 U.S. 837, 842-43 (1984)) (noting that under Chevron, the Court must first ask whether Congress directly spoke to the precise question at issue; if so, the Court must give effect to Congress' unambiguously expressed intent, and if "the statute is silent or ambiguous," the court must defer to the administering agency's construction of the statute so long as it is permissible); *see also* AT&T Corp. v. Iowa Utils. Bd., 525 U.S. 366, 397 (1999).

[183] There is no exception that exists to the normal deferential standard of review for jurisdictional and legal questions. NLRB v. City Disposal Sys. Inc., 465 U.S. 822, 830 n.7 (1984). "[T]here is no principled basis for carving out an arbitrary subset of 'jurisdictional' questions from the Chevron framework." (quoting *Arlington*, 133 S. Ct. at 1865); *see, e.g.*, Nat'l Cable & Telecomms. Ass'n v. Gulf Power Co., 534 U.S. 327, 333, 339 (2002).

[184] *Chevron*, 467 U.S. at 843 (giving the "Chevron deference" to agencies' constructions of the scope of their own jurisdiction); *see Arlington*, 133 S. Ct. at 1870-71; *see also, e.g.*, United States v. Eurodif S.A., 555 U.S. 305, 316 n.7 (2008).

[185] *See* EPA v. EME Homer City Generation, L.P., 134 S. Ct. 1584, 1609-10 (2014).

[186] *Id.* While employing a different mechanism than CAIR to address cross-state pollution, the court found that it required some states to reduce emissions by more than what they contributed to downwind state pollution. Fifteen 15 states sought review of CSAPR, while six states intervened to support the rule. *Id.* at 1595-96.

4. Federal Jurisdiction over Use of Price to Site Location of Power Projects

In separate federal courts, New Jersey[187] and Maryland[188] both lost constitutional challenges to regional generators of power in cases regarding in-state wholesale power subsidies.[189] In 2014, both the Third and Fourth Circuit Courts of Appeals upheld each decision.[190]

A federal court in Maryland[191] determined that Maryland's "contract for differences (CfD)," requiring local utilities to enter into long-term power purchase agreements, was an impermissible intrusion of state regulation on regional wholesale rates, and that it disrupted FERC-approved wholesale power markets.[192] The court concluded that when Maryland manipulates the prices of wholesale power markets, the utilities and, correspondingly Maryland ratepayers, are directly affected by the resulting wholesale prices.[193] The court held the Maryland regulation violates the Supremacy Clause of the United States Constitution by virtue of field preemption, stating:[194] "The doctrine of field preemption forecloses state regulation in a field occupied entirely by the federal government, even if the state's purpose is admirable or the state regulation does not conflict with achievement of the federal scheme."[195]

The court continued, reasoning that no rationale permits a state to cross the "bright line" limiting jurisdiction or to invade "a federally occupied field."[196] Under the Federal Power Act, as well as the Supremacy

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[187] *See* PPL EnergyPlus, L.L.C. v. Hanna, 977 F. Supp. 2d 372, 406 (D.N.J. 2013) (deciding the issue of whether the New Jersey program violated the Supremacy Clause), *aff'd sub nom.* PPL EnergyPlus, L.L.C. v. Solomon, 766 F.3d 241, 255 (3d Cir. 2014) (holding field preemption on wholesale power prices and rates).

[188] *See* PPL EnergyPlus, L.L.C. v. Nazarian, 974 F. Supp. 2d 790, 796 (D. Md. 2013) (memorandum of decision) ("Plaintiffs have established their claim that the . . . [Maryland program] violates the Supremacy Clause of the United States Constitution by virtue of field preemption"), *aff'd petition for cert. filed*, 753 F.3d 467 (4th Cir. 2014).

[189] PJM Interconnection, L.L.C., 135 F.E.R.C. ¶ 61,022, at 61,087 (2011) (order accepting proposed tariff revisions).

[190] *Solomon*, 766 F.3d at 246 (noting field preemption on wholesale prices and rates); *Nazarian*, 753 F.3d at 471.

[191] *See Nazarian*, 974 F. Supp. 2d at 790.

[192] *Nazarian*, 753 F.3d at 473 (stating that the court was persuaded in part by expert testimony explaining that the CfD went beyond a mere financing arrangement because it reflected the same factors typically used to establish rates and dictated the manner in which CPV (the winning bidder) could participate in PJM markets); *see also Nazarian*, 974 F. Supp. 2d at 834.

[193] *Nazarian*, 974 F. Supp. 2d at 815.

[194] *Id.* at 796.

[195] *Id.* at 840; *see* Arizona v. United States, 132 S. Ct. 2492, 2502-03 (2012).

[196] *Nazarian*, 974 F. Supp. 2d at 830 ("Where a state action falls within a field Congress intended the federal government alone to occupy, the good intentions and importance of the state's objective are

Clause, states cannot dictate the ultimate market price for wholesale energy and capacity sales.[197] The case raised field preemption and conflict preemption of the New Jersey LCAPP CfD proposal.[198]

A similar federal court decision in New Jersey held that the state was impermissibly regulating wholesale energy prices to promote the construction of new generation facilities in New Jersey.[199] The court held that conflict preemption "prevents state regulation of, or influence over, the wholesale price for energy transactions."[200] The state LCAPP regulation was held to:

> [I]ntrude upon the exclusive jurisdiction of the Commission, by establishing the price that LCAPP [affected New Jersey] generators will receive for their sales of capacity. The Court finds that in doing so, the LCAPP 'places a direct burden upon interstate commerce' within the meaning of the Attleboro decision. Accordingly, the LCAPP Act invades the field occupied by Congress and is preempted by the Federal Power Act.[201]

5. Federal Jurisdiction over all Wholesale Power Sales

In 2012, a federal court ruled that Vermont's regulation of its wholesale power preferences and sales violated the U.S. Constitution.[202] Preemption of state jurisdiction to regulate wholesale power transactions, as well as dormant Commerce Clause violations resulting from state attempts to discriminate in the preference for in-state regulation of power moving in interstate commerce,[203] resulted in the federal court's finding of

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immaterial to the field preemption analysis. Field preemption requires the state to 'yield to the force of federal law . . ., notwithstanding that [the state's action] is constructed upon values familiar to many and cherished by most, and notwithstanding that it may fit neatly within or alongside the federal scheme.'") (quoting French v. Pan Am Exp., Inc., 869 F.2d 1, 6 (1st Cir. 1989)).

[197] *Nazarian*, 974 F. Supp. 2d at 840.

[198] *Id.* at 825, 841; PPL EnergyPlus, L.L.C. v. Hanna, 977 F. Supp. 2d 372 (D.N.J. 2013).

[199] *Hanna*, 977 F. Supp. 2d at 372.

[200] *Id.* at 410-11 (citing Felder v. Casey, 487 U.S. 131, 138 (1988)) (quoting Free v. Bland, 369 U.S. 663, 666 (1962)); *see also* Gade v. Nat'l Solid Wastes Mgmt. Ass'n, 505 U.S. 88, 108 (1992) ("[E]ven state regulation designed to protect vital state interests must give way to paramount federal legislation.") (quoting De Canas v. Bica, 424 U.S. 351, 357 (1976)).

[201] *Hanna*, 977 F. Supp. 2d at 409.

[202] Entergy Nuclear Vt. Yankee, L.L.C. v. Shumlin, 838 F. Supp. 2d 183, 242–43 (D. Vt. 2012), *aff'd in part, rev'd in part*, 733 F.3d 393 (2d Cir. 2013).

[203] *See infra* Part V.A (dormant Commerce Clause issues).

unconstitutionality.[204] Under the Federal Power Act, 16 U.S.C. § 791a et seq.):

> Congress has drawn a bright line between state and federal authority in the setting of wholesale rates and in the regulation of agreements that affect wholesale rates. States may not regulate in areas where FERC has properly exercised its jurisdiction to determine just and reasonable wholesale rates or to insure that agreements affecting wholesale rates are reasonable." Miss. Power & Light Co. v. Miss. ex rel. Moore, 487 U.S. 354, 374 (1988) . . . [A] state "must [. . .] give effect to Congress' desire to give FERC plenary authority over interstate wholesale rates, and to ensure that the States do not interfere with this authority. Under the "filed-rate doctrine," state courts and regulatory agencies are preempted by federal law from requiring the payment of rates other than the federal filed rate. See Entergy La., Inc. v. La. Pub. Serv. Comm'n, 539 U.S. 39, 47 (2003) ("The filed rate doctrine requires 'that interstate power rates filed with FERC or fixed by FERC must be given binding effect by state utility commissions determining intrastate rates.").[205]

The Second Circuit upheld this decision, although an additional claim was found not yet ripe for review.[206]

An increasingly large majority of U.S. power now proceeds through a wholesale power sale prior to its ultimate retail sale and disposition,[207] thereby fundamentally altering the legal analysis of what is, and is not, jurisdictional for a state and the federal government to regulate.[208] Restructuring and deregulation of the retail electric power sector,

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[204] *Entergy Nuclear Vt. Yankee*, 838 F. Supp. 2d at 242–43.

[205] Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 966 (1986).

[206] *Entergy Nuclear Vt. Yankee*, 733 F.3d at 433.

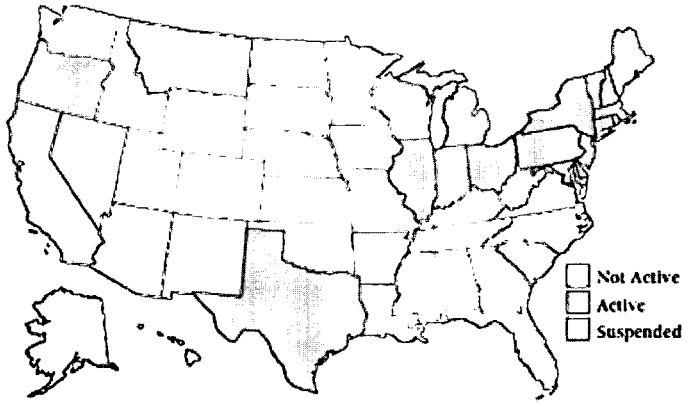
[207] THE ELEC. ENERGY MKT. TASK FORCE, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY, Electric Energy Market Competition Task Force 10 (2007), *available at* http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf ("In the 1970s, vertically integrated utility companies (investor-owned, municipal, or cooperative [utilities]) controlled over 95 percent of the electric generation in the United States. . . . [B]y 2004 electric utilities owned less than 60 percent of electric generating capacity. Increasingly, decisions affecting retail customers and electricity rates are split among federal, state, and new private, regional entities.").

[208] *See* INDEPENDENT POWER, *supra* note 5, §§ 5:26-5:28; ENVIRONMENTAL LAW, *supra* note 4, at 560-61.

commencing at the state level around 1997, dramatically changed the regulatory paradigm.[209] About 30% of states restructured prior to the electric sector problems in California from 2000 to 2001, with the other 70% of the states retaining traditionally structured retail electric sectors, as shown in Figure 5.[210]

Figure 5

Deregulation at Retail Level in States



A sizeable amount of power generation facilities, particularly wind and solar, are now owned by independent wholesale market participants, rather than the retail utility companies that deliver power to retail customers.[211] The amount of power wholesaled before it is sold at retail has shifted from only 8% in the 1960s to a majority today.[212] As noted by various federal

[209] ENVIRONMENTAL LAW, *supra* note 3, at 149–50.

[210] *See* Steven Ferrey, *Sale of Electricity*, *in* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 217, 218–19 (Michael B. Gerrard ed., 2011) [hereinafter *Sale of Electricity*].

[211] *See* Steven Ferrey, *Pentagon Preemption: The 5-Sided Loss of State Energy and Power*, 2014 U. ILL. J.L. TECH. & POL'Y 393, 408 n.107 (2014) [hereinafter *Pentagon Preemption*] ("This spun generation assets, including nuclear generation, out into independent ownership not subject to state regulation. The costs of these independent wholesale power entities are not recovered through state-regulated retail rates, but rather through wholesale rates subject to FERC's exclusive jurisdiction." (citation omitted)).

[212] *See* INDEPENDENT POWER, *supra* note 5, at 10-11; ENVIRONMENTAL LAW, *supra* note 3, at 587.

courts, and affirmed by the Supreme Court, these independent market participants are the new competitive reality in power and energy markets:[213]

When combined with federal preemption law, one crucial result of these energy market regulatory reforms has been 'a massive shift in regulatory jurisdiction from the states to FERC.' . . . The upshot of these federal and state innovations in electricity regulation is that state regulators, despite their continued authority over rates charged directly to consumers, have much less actual authority over those rates than they did [earlier]. Local utilities now obtain power largely through wholesale contracts subject to FERC's exclusive regulation, rather than through self-generated and transmitted power . . . Although state regulators formerly took an extremely active role so as to ensure the just and reasonable retail power rates, FERC has exclusive jurisdiction over the wholesale rates that now drive the electric power market and, as a practical matter, largely determine the rates ultimately charged to the public.[214] The entrance of new wholesale competitive power market participants shifts regulatory jurisdiction over energy commerce and transactions from states to the FERC. In this newly deregulated environment, the cost of building and operating facilities is no longer recovered directly through retail rates.[215] Instead, retail customers pay for the retail distribution utility's cost of buying wholesale power in a wholesale transaction, subject to the FERC's exclusive jurisdiction over wholesale power transactions.[216] As a result, many of the traditional state responsibilities for regulating power have now shifted to the FERC through its exclusive regulatory authority over the rates, terms, and conditions of wholesale sales and transmission of power,[217] as well as to the competitive power market in approximately one-third of the states.[218]

The United States Supreme Court has repeatedly held that states are preempted by the Supremacy Clause of the United States Constitution[219] from directly or indirectly interfering with federal power regulation.[220] When applied to electric power issues, the Supremacy Clause of the

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[213] *See* INDEPENDENT POWER, *supra* note 5, at 269-70.

[214] *See* Pub. Util. Dist. No. 1 v. FERC, 471 F.3d 1053, 1066-67 (9th Cir. 2006), *aff'd in part, rev'd in part sub nom.* Morgan Stanley Capital Grp. v. Pub. Util. Dist. No. 1, 554 U.S. 527 (2008); *see also* Entergy Nuclear Vt. Yankee, L.L.C. v. Shumlin, 733 F.3d 393 (2d Cir. 2013).

[215] *See Sale of Electricity, supra* note 210, at 219-20.

[216] *Id.*

[217] *See* 16 U.S.C. § 824a-3 (2006); *see also* ENVIRONMENTAL LAW, *supra* note 3, at 569.

[218] *See* ENVIRONMENTAL LAW, *supra* note 3, at 594.

[219] U.S. CONST. art. VI, cl. 2.

[220] FERC v. Mississippi, 456 U.S. 742, 760–61 (1982).

Constitution[221] is embodied in the Filed Rate Doctrine, which establishes an absolute line the states may not cross to regulate electric power.[222] The Court has held that the Federal Power Act invests the Federal Energy Regulatory Commission with "'exclusive authority to regulate the transmission and sale at wholesale of electric energy in interstate commerce.'"[223]

The Supreme Court in 1986,[224] and again in 1988,[225] 2003,[226] and 2008,[227] reaffirmed and enforced the Filed Rate Doctrine as applied through the Supremacy Clause, when states attempted to assert jurisdiction in areas subject to the FERC's exclusive authority. The 1986 Supreme Court decision concluded that the Filed Rate Doctrine limitations also apply " . . . to decisions of state courts."[228] The Filed Rate Doctrine is an absolute prohibition of state regulation of wholesale power rates, contracts and terms, which are reserved exclusively to federal authority: "The filed rate doctrine is not limited to 'rates' *per se*: 'our inquiry is not at an end because the orders do not deal in terms of prices or volumes of purchases.'"[229] The Supreme Court in 2008 reiterated that the Federal Power Act creates a "'bright line' between state and federal jurisdiction with wholesale power sales...falling on the federal side of the line."[230] This most recent decision articulated an unbroken line of Supremacy Clause application barring state regulation:

> Congress has drawn a bright line between state and federal authority in the setting of wholesale rates and in the regulation of agreements that affect wholesale rates. States may not regulate in areas where FERC has properly exercised its jurisdiction to determine just and reasonable

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[221] U.S. CONST. art. IV, cl. 2.

[222] Entergy La., Inc. v. Louisiana Pub. Serv. Comm'n, 539 U.S. 39, 49-50 (2003); Miss. Power & Light Co. v. Miss. *ex rel.* Moore, 487 U.S. 354, 371 (1988); Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 964 (1986).

[223] *See* Entergy Nuclear Vt. Yankee, L.L.C. v. Shumlin, 838 F. Supp. 2d 183, 233 (D. Vt. 2012) (noting that the state withheld a Certificate of Public Good until Vermont Yankee entered a below-market power purchase agreement with state entities crossed this "bright line" separating federal and state authority pursuant to the Supremacy Clause); *see also* 16 U.S.C. § 824(b)(1) (2006).

[224] *Nantahala Power & Light Co.*, 476 U.S. at 963.

[225] *Miss. Power & Light Co.*, 487 U.S. at 355.

[226] *Entergy La.*, 539 U.S. at 40.

[227] Morgan Stanley Capital Grp. v. Pub. Util. Dist. No. 1, 554 U.S. 527 (2008).

[228] *Nantahala Power & Light Co.*, 476 U.S. at 963.

[229] *Id.* at 966-67 (quoting N. Nat. Gas Co. v. State Corp. Comm'n, 372 U.S. 84, 90-91 (1963)).

[230] *See* Pub. Util. Dist. No. 1 v. FERC, 471 F.3d 1053, 1066 (9th Cir. 2006) (citing *Nantahala Power & Light Co.*, 476 U.S. at 966; Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 215 (1964); *Miss. Power & Light Co.*, 487 U.S. at 371).

wholesale rates or to insure that agreement affecting wholesale rates are reasonable.[231]

E. Where Federal Authority Cannot Intrude on Power

The FERC is not without restrictions in supporting competition. With regard to two significant matters, the federal courts have prevented FERC orders or actions to increase the competitive scope of electric supply in the United States.[232] The first decision bars federal action to increase the amount of transmission corridors for carrying power across state lines from its point of production to regions of consumption.[233] The second decision bars FERC from issuing orders that require regional power grid managers to allow demand resources (i.e. cutbacks in power), to compete on an equal basis with power generation.[234] Both change the landscape of the new power environment and will be further discussed in this article.

1. No Federal Preemption of Transmission Line Siting

Engineers recognized the high-voltage transmission network, or the "grid," as the most important engineering feat of the twentieth century.[235] In terms of physical assets, the grid is composed of approximately 2,000 electric distribution utilities, 7,000 power plants, over 300,000 miles of transmission and distribution lines to connect with consumers, and the hardware to manage all of this in an energized instantaneous network.[236] At 230 kV and higher, the "grid" comprises 167,000 miles of line in America.[237] In the U.S. there is an eastern interconnection, a western interconnection, and a separate interconnection that includes most of Texas.[238] The transmission system operates at fifteen different voltage

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[231] Miss. Power & Light Co. v. Miss. *ex rel.* Moore, 487 U.S. 354, 374 (1988).

[232] *See* Piedmont Envtl. Council v. FERC, 558 F.3d 304, 315 (4th Cir. 2009); Elec. Power Supply Ass'n v. FERC, 753 F.3d 216, 219 (2014).

[233] *Piedmont Envtl. Council*, 558 F.3d 304 at 315.

[234] *Elec. Power Supply Ass'n*, 753 F.3d at 221.

[235] *Pentagon Preemption*, *supra* note 211, at 419 (citing Mason Willrich, *Electricity Transmission Policy for America: Enabling a Smart Grid, End to End*, 22 ELEC. J. 77, 77 (2009)).

[236] *What is the Electric Power Grid and What are Some Challenges it Faces?*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energy_in_brief/article/power_grid.cfm (last updated Sept. 16, 2014); *see also Glossary: Electric Power Grid*, U.S. ENERGY INFO. ADMIN., http://www.eia.doe.gov/glossary/glossary_e.htm#electr_pow_grid (last visited Oct. 20, 2015).

[237] STAN MARK KAPLAN, CONG. RESEARCH SERV., R40511, ELECTRIC POWER TRANSMISSION: BACKGROUND AND POLICY ISSUES 2, n.3 (2009), *available at* http://fpc.state.gov/documents/organization/122949.pdf (discussing miles of transmission lines).

[238] *Id.* at 3 fig.2 (providing a visual display of interconnections).

levels,[239] with limited power transactions between these three major interconnections. In 2010, the North American Electric Reliability Corporation ("NERC") concluded that an additional 39,000 circuit miles of new transmission capacity would need to be constructed during the following ten years to maintain long-term reliability of the "grid" and to integrate intermittent additional renewable power generation.[240]

In 2005, Congress enacted the Energy Policy Act ("EPAct 2005"), which added § 216 to the Federal Power Act, [241] and which directed the Department of Energy ("DOE") to study transmission congestion in consultation with the states.[242] Section 216 allows DOE to designate certain transmission-constrained areas as National Interest Electric Transmission Corridors ("NIETCs"),[243] and grants the FERC the authority under certain circumstances to issue permits to construct transmission facilities in these NIETCs.[244] After the addition of § 216, the DOE designated two critical corridors as NIETCs: the Mid-Atlantic Area National Corridor in the Midwest and Atlantic regions, and the Southwest Area National Corridor in Arizona and California.[245]

Shortly after the enactment of EPAct 2005, the FERC issued Order No. 689 in 2006, which detailed the various requirements and procedures for applications submitted under § 216.[246] The federal push for NIETCs under the EPAct 2005 was criticized for turning environmentally sensitive areas into energy corridors, and for essentially running a giant extension cord to existing coal sources.[247] Environmental groups filed multiple suits on this and past FERC actions for failure to adequately assess greenhouse

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[239] *Pentagon Preemption*, *supra* note 211, at 410 (citing Craig Cano, *Efficiency Should Be Viewed As Key Part of Entire Delivery System, Wellinghoff Says*, ELEC. UTIL. WEEK, Dec. 13, 2010, at 18, 19).

[240] N. AM. ELEC. RELIABILITY CORP., 2010 LONG-TERM RELIABILITY ASSESSMENT 23 (Oct. 2010), *available at* http://www.nerc.com/files/2010_ltra_v2-.pdf.

[241] 16 U.S.C. § 824p (2011).

[242] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1221(a), 119 Stat. 594, 946 (2005) (codified at 42 U.S.C. § 15801 *et. seq.* (2010)).

[243] *Id.*

[244] *See* 16 U.S.C. § 824p(b) (2011).

[245] *See* Cal. Wilderness Coal. v. U.S. Dep't of Energy, 631 F.3d 1072, 1079 (9th Cir. 2011) (holding that DOE's actual designations of these corridors were arbitrary, capricious, and not supported by evidence).

[246] *See* Regulations for Filing Applications for Permits to Site Interstate Electric Transmission Facilities, 71 Fed. Reg. 69,440 (Dec. 1, 2006) (to be codified at 18 C.F.R. pts. 50, 380).

[247] Steven Ferrey, *Follow the Money! Article I and Article IV Constitutional Barriers to Renewable Energy in the U.S. Future*, 17 Va. J.L. & Tech. 89, 141 (2012) [hereinafter *Follow the Money!*].

gas ("GHG") impacts under the National Environmental Policy Act ("NEPA").[248]

In 2009, the Fourth Circuit ruled that the FERC has no authority to issue permits under § 216 when a state denies an application for siting transmission facilities.[249] Rather, the Fourth Circuit found that the FERC's backstop authority is limited to instances in which a state withholds approval for more than a year.[250] The state's decision to take action, such as the denial of a permit, did not invoke the FERC's ability to intercede.[251]

A decision in 2011 vacated the DOE's 2007 Transmission Congestion Study, which designated NIETCs in Mid-Atlantic and Southwestern states.[252] This was one of the decisions that limited or undermined the § 216 federal siting authority.[253] The Ninth Circuit ruled that the DOE did not properly consult with affected states in preparing the Congestion Study, as required by § 216, and also failed to consider the environmental effects of designating NIETCs under NEPA.[254] This is therefore one area in which federal authority does not preempt state authority. States retain complete authority over the physical sites of electric transmission lines.[255] Once in place, the FERC and federal authority controls all tariffs and terms for transmission of power and the sale of wholesale power.[256]

2. *FERC Order 745: No Authority over Demand Response in Lieu of Power Supply*

Another FERC action, Order 745, mandated that ISOs pay demand-response resources on an equal basis with power generation resources for energy—the Locational Marginal Price ("LMP") calculated for each hour of the next operating day[257] —as an alternative to a generation resource

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[248] *See* Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172 (9th Cir. 2008); Mid States Coal. for Progress v. Surface Transp. Bd., 345 F.3d 520 (8th Cir. 2003); Border Power Plant Working Grp. v. U.S. Dep't of Energy, 260 F. Supp. 2d 997 (S.D. Cal. 2003).

[249] Piedmont Envtl. Council v. FERC, 558 F.3d 304, 315 (4th Cir. 2009).

[250] *Id.*

[251] *Id.*

[252] Cal. Wilderness Coal. v. U.S. Dep't of Energy, 631 F.3d 1072, 1107 (9th Cir. 2011).

[253] *Id.* at 1106 (discussing DOE's authority to designate NIETC's and FERC's authority to issue construction permits under § 216).

[254] *Id.* at 1107.

[255] *See* Order No. 1000, *supra* note 139, ¶ 287.

[256] *See* Pub. Util. Dist. No. 1 v. FERC, 471 F.3d 1053, 1066-67 (9th Cir. 2006), *aff'd in part, rev'd in part sub nom.* Morgan Stanley Capital Grp. v. Pub. Util. Dist. No. 1, 554 U.S. 527 (2008); *see also* Entergy Nuclear Vt. Yankee, L.L.C. v. Shumlin, 733 F.3d 393 (2d Cir. 2013).

[257] Elec. Power Supply Ass'n v. FERC, 753 F.3d 216, 219 (2014) (stating that LMP is the market price used to compensate energy generators in organized wholesale energy markets, and is calculated to

when the dispatch of the demand-response resource is cost-effective.[258] This would diversify energy resources and support wider competition among technologies. While not many consumers have their own generation units, it would seem that all should be capable of supplying energy
reduction in response to incentives.

When challenged in court, the FERC unsuccessfully asserted its authority under the *Chevron* doctrine with regard to the broad 'affecting' language of §§ 205 and 206 of the Federal Power Act,[259] and the policy statements in the EPAct 2005.[260] Section 205 directs the FERC to ensure that "all rules and regulations *affecting* . . . rates" in connection with wholesale sales of electric energy are "just and reasonable."[261] Although the court agreed that demand response affects the wholesale market, the court found this to go beyond the limits of §§ 205 and 206.[262] The court ruled that Order No. 745 constituted FERC regulation of retail sales of electricity, which is exclusively within the legal authority of states.[263] The FERC argued that it was only regulating "practices" affecting wholesale energy markets.[264] However, the court concluded this would leave no boundaries on the FERC's authority.[265] As the court stated, §§ 205 and 206 "could ostensibly authorize FERC to regulate any number of areas, including the steel, fuel, and labor markets . . . If FERC thinks its jurisdictional struggles are its only concern with Order 745, it is mistaken."[266]

In this split decision, the D.C. Circuit Court of Appeals overturned FERC Order No. 745, vacating it in its entirety, and later denying a petition for rehearing en banc.[267] FERC's opponents argued that Order 745 "over-compensates" demand response resources because it

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reflect the least-cost of providing incremental mega-watt hours of demand at each location on the transmission grid; therefore, prices alter based on location and time).

[258] *Id.* (stating that the cost effectiveness is determined by a "net benefits test," which ensures that the benefit of the reduced LMP that results from dispatching demand-response resources exceeds the cost of dispatching and paying LMP to those resources).

[259] 16 U.S.C. §§ 824d-824e (2011).

[260] *See Elec. Power Supply Ass'n*, 753 F.3d at 236.

[261] 16 U.S.C. § 824d(a) (2011) (emphasis added).

[262] *Elec. Power Supply Ass'n*, 753 F.3d 216, at 221 (stating that the states have exclusive authority to regulate the retail market of electric energy, thus the "affecting" authority does not allow FERC to overreach into the retail market regulation under Federal Power Act §201 limits. A broad "affecting" authority would allow FERC to directly regulate the retail market whenever the retail market affects the wholesale market, rendering the states' exclusive retail market jurisdiction a nullity).

[263] *Id.* at 224.

[264] *Id.*

[265] *Id.* at 222.

[266] *Id.* 221-22, 225.

[267] *Id.* at 225.

requires LMP compensation *plus* "allows savings retention associated with avoided retail generation cost."[268] The court agreed and noted that "[c]omparable contributions cannot be [a valid] reason for equal compensation, when generation resources are incomparably saddled with generation costs . . . ."[269] The FERC cannot justify current over-compensation by alleged past under-compensation, and demand response resources receive an unjustified potential windfall.[270]

In addition to exercising intruding jurisdiction, the court found that the FERC failed to address arguments that the authorized demand response payments were excessive at the same price paid to wholesale energy suppliers.[271] This subsidized demand response, which would receive payments for not using electricity and benefit from a lower energy bill, "seem[ed] troubling."[272] The D.C. Circuit articulated a key distinction with demand response: "demand response resources do not actually sell into the market. Demand response does not involve a sale, and the resources 'participate' only by declining to act."[273] Under the Federal Power Act, the FERC is empowered to regulate "the *sale* of electric energy at *wholesale* in interstate commerce."[274] The court reasoned that a reduction in consumption of electric energy for monetary payments to decrease electric energy consumption is not actually a sale into the market.[275]

In his dissent, Judge Edwards concluded that the FERC had jurisdiction to issue Order 745 because demand response is an ambiguous matter of retail regulation under the Federal Power Act, and demand response resources subject to the rule's limitations directly affect wholesale electricity prices.[276] Judge Edwards noted, "this court has no business second-guessing the Commission's judgment on the level of compensation."[277] The majority ruled that Order No. 745 was FERC regulation of retail sales of electricity, exclusively within the legal authority of states.[278] Thus, it is clear that the FERC's authority to promote competition has legal limits when it crosses the line beyond sales of power.

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[268] *Id.* (citing *Demand Response Compensation in Organized Wholesale Energy Markets: Order on Rehearing and Clarification*, 137 F.E.R.C. ¶ 61,215 (2011)).

[269] *Id.*

[270] *Id.*

[271] *See id.*

[272] *See id.*

[273] *Id.* at 221.

[274] 16 U.S.C. § 824(b)(1) (2011) (emphasis added).

[275] *Elec. Power Supply Ass'n*, 753 F.3d at 221.

[276] *Id.* at 229.

[277] *Id.* at 238 (citing La. Pub. Serv. Comm'n v. FERC, 551 F.3d 1042, 1045 (D.C. Cir. 2008)).

[278] *Id.* at 221.

IV. STATE INCENTIVES TO PROMOTE COMPETITION IN IN-STATE POWER

Approximately sixteen states independently decided to increase competition and partially or fully deregulate retail power transactions in their states.[279] States have adopted a significant set of incentives to promote competitive generation of power by independent power producers, concentrating on renewable energy with five legal and policy initiatives:

- Net Metering: 85% of states
- Renewable portfolio standards: 65% of states
- Renewable System Benefit Charges: 33% of states
- Carbon and GHG regulation: 20% of the states
- Feed-In Tariffs: 10% of states[280]

Under each policy, the state acts as a regulator, and neither owns the renewable power generation capital equipment, nor transacts any sale of the power produced itself.[281] It is this action as a regulator, rather than a market participant, which can raise constitutional issues with regard to discriminatory state renewable energy initiatives.[282] Below is a brief overview of these state pro-competition initiatives for independent non-utility entities. Then, the section that follows outlines treatment of the anti-competitive discriminatory aspects of some of these state programs.

A. Feed-In Tariffs

A feed-in tariff ("FIT") is a regulatory requirement that some impose on their regulated utilities to purchase certain designated types of independent power generation on a wholesale basis, typically from renewable resources or combined heat and power ("CHP") units, and at prices well in excess of the market value of wholesale power.[283] The regulated utilities are forced to "buy high" in terms of other electric power

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[279] *See supra* Figure 5.

[280] Steven Ferrey, *Alternative Energy in a Spaghetti Western: Clint Eastwood Confronts State Renewable Energy Policy*, 32 UTAH ENVTL. L. REV. 279, 288 (2012) [hereinafter *Alternative Energy*].

[281] ENVIRONMENTAL LAW, *supra* note 3, at 159-62 (examining the market participant exception).

[282] *Id.*

[283] *See* INDEPENDENT POWER, *supra* note 5, § 10:134.

available in the market.[284] FIT's administratively torque the operating power market in favor of those who sell certain state-designated, independent, competitive power, and do not adhere to accepted rate-making methodology to minimize prudent utility-incurred costs.[285] FIT costs are passed on to captive consumers by the utilities.[286]

The number of FITs has expanded dramatically during the past several years from just a few policies in the 2000s, concentrated primarily in Europe, to dozens of FIT policies in jurisdictions around the world.[287] In the mid-1990s, the federal courts and the FERC separately struck down FITs in California.[288] Fifteen years later, after enacting a new FIT that required California state utilities to make wholesale power purchases at rates well in excess of wholesale rates and avoided costs, there was again a challenge over whether this violated the Federal Power Act and the Supremacy Clause of the U.S. Constitution.[289]

California was unsuccessful in arguing that it was only regulating the buyers of power and not the sellers in the transaction. [290] The decision held that the FERC's authority under the Federal Power Act includes the exclusive jurisdiction to regulate the rates, terms, and conditions of sales for resale of electric energy in interstate commerce.[291] The FERC held that "even if a QF has been exempted pursuant to the Commission's regulations from the ratemaking provisions of the Federal Power Act, a state still cannot impose a ratemaking regime inconsistent with the requirements of PURPA and this Commission's regulations—i.e., a state cannot impose rates in excess of avoided cost."[292] The FERC reiterated that only the federal government can regulate commerce between the states, and therefore California could not attempt to regulate commerce outside its borders.[293]

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[284] *See generally* U.S. DEP'T OF ENERGY, ELECTRIC POWER ANNUAL REPORT (Mar. 2015), http://www.eia.gov/electricity/annual/pdf/epa.pdf (providing the annual statistics for each state's average cost to the ultimate consumer for electric power).

[285] *See* INDEPENDENT POWER, *supra* note 5, § 5:9.

[286] *See id.* § 10:134.

[287] *See* REN21, RENEWABLES 2013 GLOBAL STATUS REPORT 116 (2013), *available at* http://www.ren21.net/Portals/0/documents/Resources/GSR/2013/GSR2013_lowres.pdf.

[288] *See* Indep. Energy Producers Ass'n v. Cal. Pub. Utils. Comm'n, 36 F.3d 848, 853 (9th Cir. 1994); *see also* S. Cal. Edison Co., 70 FERC ¶ 61,215, at 61,666 (1995).

[289] *See* Cal. Pub. Utils. Comm'n, 132 F.E.R.C. ¶ 61,047, at 61,327 (2010).

[290] *See id.* ¶ 61,337-38.

[291] *See* 16 U.S.C.A. § 824(a) (2011); *e.g.*, Miss. Power & Light Co. v. Miss. *ex rel.* Moore, 487 U.S. 354, 376-77 (1988).

[292] *See* Conn. Light & Power Co., 71 F.E.R.C. ¶ 61,035, at 61,153 (1995).

[293] *See generally Cal. Pub. Utils. Comm'n*, 133 F.E.R.C. ¶ 61,059 (2010).

B. Net Metering Credits

Under net metering, when the customer purchases and uses electricity from the distribution company, the meter runs forward; when more electricity is produced from the facility than is consumed by the customer, the excess is sent to the electricity grid, running the meter in the opposite direction and reversing the net accounting of power flow.[294] By turning the meter backwards, and because only a single rate applies to a single meter, net metering effectively compensates the generator at the full retail rate (which includes that approximately two-thirds of the retail bill is attributable to transmission, distribution, and taxes) for transferring just the wholesale energy commodity—the power itself.[295]

Net metering supports competitive, on-site distributed power generation.[296] It is not designed to charge customers a fair price based on ratemaking law, rather, it is a random price generally equal to the retail price, which has no direct correspondence to the value of wholesale power traded in the market.[297] The net metering customer uses the distribution grid twice (going and coming) and is assessed as if it does not use the grid at all.

Forty-four states, as well as the District of Columbia, have authorized net metering policies, while four states (Alabama, Mississippi, South Dakota, and Tennessee) do not have net metering.[298] As of 2003, there were approximately 7,000 net metering customers in the U.S., with that number increasing to 150,000 by 2010.[299] Each of the forty-four state net metering programs is distinct, differing as to allowable sizes of units, vintage and

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[294] *See Glossary: Net Metering*, DSIRE, http://www.dsireusa.org/support/glossary/ (last visited Oct. 21, 2015) ("When a customer's generation exceeds the customer's use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle.").

[295] *See id.* ("In effect, the customer uses excess generation to offset electricity that the customer otherwise would have to purchase at the utility's full retail rate."); *see also* NEW RULES, *supra* note 6, at 211-31 (providing more discussion as to whether electricity is a "good" or a "service," and how it should be treated under the law).

[296] *Net Metering: Policy Overview and State Legislative Updates*, NAT'L CONFERENCE OF STATE LEGS. (Dec. 18, 2014), http://www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx.

[297] The wholesale price is a competitive price determined by the cost of generation. The retail rate billed through the retail meter includes the wholesale cost of power, the cost of distribution, the cost of transmission, a significant invisible tax imposed by state and local government not itemized on the bill, system transition costs, and other system benefit charges or other subsidies incorporated in the retail rates. The value of wholesale power transactions is not in any way equivalent to the charges in the retail rate.

[298] *Net Metering: Policy Overview and State Legislative Updates*, *supra* note 296.

[299] *Participation in Electric Net-Metering Programs Increased Sharply in Recent Years*, U.S. ENERGY INFO. ADMIN. (May 15, 2012), http://www.eia.gov/todayinenergy/detail.cfm?id=6270.

longevity of credits, ability to cash out credits, eligible classes of customers, and eligible technologies.[300] States implementing net metering programs vary widely in terms of maximum size limits. Those limits range from 1 MW in Indiana, to 80 MW in New Mexico.[301] There is no limit in Arizona and Ohio.[302] In California, the maximum generation capacity is 1 MW, and unused credits generated by a consumer, or group of consumers, electing to net meter are reverted back to the utility at the end of each year.[303] In New York, there is a 2 MW cap on generation eligible for net metering, but this limit only applies to non-residential solar or wind projects, whose generators must stay below a 25 kW maximum.[304] Some states, such as Connecticut,[305] have "virtual net metering," which is more far-reaching than other states because net-metering credits can be transferred to other customers in the utility service territory.[306]

Electricity, unlike all other forms of energy, cannot be stored efficiently for more than a second without being lost as waste heat.[307] Therefore, a nation's supply of electricity must match the demand for electricity over its centralized utility grid on an instantaneous basis, or else the electric system shuts down or expensive equipment is damaged.[308] The utility must sell the net-metered power immediately—within a nanosecond—or it will be lost as waste heat.[309] Additionally, the cost of producing electricity varies greatly hour by hour, which makes the cost to the utility to produce or obtain the power incredibly time-sensitive.[310]

C. State Renewable Portfolio Standards

A renewable portfolio standard ("RPS") induces certain electricity sellers and buyers to maintain evidence of a predetermined percentage of

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[300] *See Database of State Incentives for Renewables and Efficiency*, DSIRE, http://www.dsireusa.org (last visited Oct. 21, 2015) (allowing users to click on each state's net metering policy to view the specific rules and regulations of that policy).

[301] *See Best Practices in State Net Metering Policies and Interconnection Procedures*, FREEING THE GRID, *http://freeingthegrid.org* (last visited Oct. 21, 2015) (allowing users to click on map for information on each state).

[302] *Id.*

[303] *Id.*

[304] *Id.*

[305] CONN. GEN. STAT. § 16-244u (2011).

[306] *Net Metering: Policy Overview and State Legislative Updates*, *supra* note 296.

[307] *See* ENVIRONMENTAL LAW, *supra* note 3, at 542.

[308] *See* STEVEN FERREY, UNLOCKING THE GLOBAL WARMING TOOLBOX: KEY CHOICES FOR CARBON RESTRICTION AND SEQUESTRATION 149-150 (Stephen Hill ed., 2010) [hereinafter UNLOCKING].

[309] *See* ENVIRONMENTAL LAW, *supra* note 3, at 542.

[310] *See Welcome, Smart Meters. Will Smart Devices and Prices Follow?*, 23 ELEC. J. 3 (Aug. 2010).

designated clean resources in their wholesale electric supply mixes.[311] Independent, competitive power generators can make direct bilateral sales of the renewable energy credits ("RECs") they have earned to retail power suppliers, who are required by state law to purchase enough RECs each year to equal the state's required percentage of power generation.[312] Sixteen states and the District of Columbia have RPSs.[313]

> It is estimated that 45% of the 4,300 MW of wind power installed in the U.S. between 2001-2004 was motivated by state RPSs, while an additional 15% of these installations were motivated by state renewable energy trust funds and subsidies.[314] Current RPSs are projected to add 76,750 MW of additional renewable generation by 2025.[315] The required percentage of energy delivered to consumers from eligible renewable sources currently varies from less than five percent to nearly thirty percent of annual retail sales in various state programs.[316] Furthermore, state RPS programs differ greatly in terms of what technologies qualify.[317] Many RPS programs target only new renewable projects in lieu of existing projects.[318]

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[311] The resources such as renewables, DSM, or high efficiency fossil combustion, as defined by a particular state, would be included in the company's overall resource portfolio. Portfolio requirements can be applied to electricity sellers, such as generation companies and vertically integrated utilities as a condition of continued market access. The requirements could also be applied to wholesale electricity buyers, such as distribution companies and electricity brokers, but the states do not exercise authority over wholesale markets.

[312] *See Renewable Energy Certificates*, U.S. DEP'T. OF ENERGY, http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5 (last visited Nov. 27, 2015).

[313] *Renewable Portfolio Standard Policies*, NAT'L RENEWABLE ENERGY LAB., http://www.nrel.gov/tech_deployment/state_local_governments/basics_portfolio_standards.html (last visited Dec. 30, 2015).

[314] MARK BOLLINGER & RYAN WISER, BALANCING COST AND RISK: THE TREATMENT OF RENEWABLE ENERGY IN WESTERN UTILITY RESOURCE PLANS 1 (2005), *available at* https://emp.lbl.gov/sites/all/files/REPORT%20lbnl%20-%2058450_0.pdf.

[315] Brad Plummer, *The Biggest Fight Over Renewable Energy Is Now in the States*, WASH. POST WONKBLOG (Mar. 25, 2013), http://www.washingtonpost.com/news/wonkblog/wp/2013/03/25/the-biggest-fights-over-renewable-energy-are-now-happening-in-the-states/.

[316] *See, e.g.*, *Indiana: Clean Energy Portfolio Goal*, DSIRE, http://programs.dsireusa.org/system/program/detail/4832 (last updated May 12, 2015) (showing Indiana's requirement that between 2013-2018, 4% of energy supplied to consumers must come from eligible renewable sources); *New York: Renewable Portfolio Standard*, DSIRE, http://programs.dsireusa.org/system/program/detail/93 (last updated Aug. 7, 2015) (showing New York's requirement that by the end of 2015, 29% of energy delivered to consumers must come from eligible renewable sources).

[317] Steven Ferrey et al., *Fire and Ice: World Renewable Energy and Carbon Control Mechanisms Confront Constitutional Barriers*, 20 DUKE ENVTL. L. & POL'Y F. 125, 146-47 (2010) [hereinafter *Fire*

Twenty-three of the twenty-nine states that have mandatory programs trade and use RECs.[319] As a quick calculation, the typical national cost a utility incurs to purchase RECs is approximately a forty percent increase in cost of the value of the wholesale power itself (not the total cost of retail bundled cost including taxes).[320] For a utility in Massachusetts, the REC purchase price is currently about 120% the wholesale cost of the power itself.[321] With solar RECs, the price in some states has been averaging 500% over the value of the power, that is the cost to utilities for solar RECs.[322]

State RPS geographic eligibility rules regarding RECs may limit eligible projects geographically. A number of states have enacted RPS laws that treat renewable energy created in the state, or within an immediate geographic region, preferentially to renewable energy generated in other states.[323] This raises significant constitutional issues.[324] A number of states prohibit the REC credit for out-of-state or out-of-region generation facilities.[325] Some states attempt to limit projects to those constructed within the state or require direct interconnection to the state or state-connected regional grid.[326] These geographic program restrictions raise dormant commerce clause concerns under the U.S. Constitution.[327]

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and Ice] (explaining that the percentage of renewable projects is different in each state as to the following: energy versus capacity obligations; single-tier or multi-tier credit determinations; the duration of purchase obligations; whether there are requirements for resource diversity; whether there are incentives for resource or technology diversity; whether all default service providers must participate; geographic eligibility for credits; whether there is differentiation by type of renewable resource; whether credits can be earned only by new renewable generation units or also by pre-existing units; the definition of new or incremental generation and where that is applicable; how multi-fuel facilities are categorized; how off-grid resources are categorized; and whether distributed generation on customer sides of meters is allowed).

[318] *See* Steven Ferrey, *Threading the Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power*, 7 TEX. J. OIL GAS & ENERGY L. 59, 64–66 (2011-12).

[319] *See Programs: Renewables Portfolio Standard*, http://programs.dsireusa.org/system/program?type=38& (last visited Oct. 21, 2015) (providing a table where users can read summaries of RPS programs in states that have them).

[320] Author's calculation (assuming a trading price of $15-20 for a state REC).

[321] Author's calculation (assuming a $60/REC selling price with the wholesale power being transacted in ISO-NE at an approximate average price of $50/MWh).

[322] Author's calculations (assuming Massachusetts' solar RECs selling in the $220-500/SREC trading range).

[323] *See infra* text accompanying notes 365-68, 373-84.

[324] *See* discussion *infra* Section V.B.

[325] K.S. Cory & B.J. Swezey, *Renewable Portfolio Standards in the States: Balancing Goals and Implementation Strategies* 8 (Nat'l Renewable Energy Lab., Technical Report No. NREL/TP-670-41409, 2007), *available at* http://www.nrel.gov/docs/fy08osti/41409.pdf.

[326] *See infra* notes 365-68, 384.

[327] *See infra* note 389.

D. State System Benefit Charges

A system benefits charge ("SBC") is a per kilowatt power surcharge imposed through monthly utility bills on all retail electricity consumers within a state utility's service territory, which in turn funds an additional state-controlled or state-administered energy fund.[328] These state renewable trust funds distribute money to subsidize various renewable energy resource projects and technologies pursuant to state legislation.[329] Approximately one-third of the U.S., seventeen states plus the District of Columbia, have enacted SBC and "public benefit funds."[330]

Most of these state programs only provide assistance to new independent competitive energy projects. A number of these states, either explicitly or as a matter of practice, will only fund sustainable energy projects within their own states, even though power from all sources inside and outside the state are taxed to create the SBC fund.[331] For example, the Illinois legislature decided its program would develop new renewable energy resources and clean coal technologies for distributing its funds, but "[t]he criteria should promote the goal of fostering investment in and the development and use, *in Illinois*, of renewable energy resources."[332] However, the effectuation of the desire to retain subsidy funds for in-state benefit raises the constitutional issue of discriminating against commerce in out-of-state electricity.[333]

FITs are unconstitutional when adopted by states for their regulated investor-owned utilities,[334] and as examined below, RPS[335] and net metering[336] have attracted protracted Constitutional scrutiny.

V. LEGAL CHALLENGE TO STATE ANTI-COMPETITIVE ENERGY RESTRICTIONS

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[328] *Glossary: Public Benefit Funds*, DSIRE, http://www.dsireusa.org/support/glossary/ (last visited Oct. 15, 2015); *see also* Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Environmental Regulation: The Case of Electricity Deregulation*, 26 ECOLOGY L.Q. 243, 295 (1999).

[329] *Glossary: Public Benefit Funds*, *supra* note 328; Engel, *supra* note 328, at 295-96.

[330] *See* Elizabeth Doris et al., *State of the States 2009: Renewable Energy Development and the Role of Policy* 65 (Nat'l Renewable Energy Lab., Technical Report No. NREL-TP-6A2-46667, 2009), *available at* http://www.nrel.gov/docs/fy10osti/46667.pdf.

[331] *See* Engel, *supra* note 328, at 295.

[332] 20 ILL. COMP. STAT. 687/6-3(a)-(b) (2009) (emphasis added); *see also* 20 ILL. COMP. STAT. 687/6-4(b) (2008).

[333] *See Follow the Money!*, *supra* note 247, at 102; *Fire and Ice*, *supra* note 317, at 158.

[334] *See* discussion *supra* Section III.D.5.

[335] *See* discussion *infra* Section V.B.

[336] *See* discussion *infra* Section V.G.

A. The Dormant Commerce Clause and State Policy

The Dormant Commerce Clause of United States Constitution prohibits actions that are facially discriminatory against interstate commerce, and thus discriminate against out-of-state competition.[337] A regulation that "evinces" discriminatory purpose against interstate commerce "or unambiguously discriminates in its effect . . . almost always is 'invalid per se.'"[338] All objects of interstate trade merit Commerce Clause protection, which includes electric energy in interstate commerce:[339] "[I]t is difficult to conceive of a more basic element of interstate commerce than electric energy, a product used in virtually every home and every commercial or manufacturing facility. No State relies solely on its own resources in this respect."[340]

State RPS programs, FITs, system benefit charges, climate control regulation, and net metering programs constitute a broad array of distinct wholesale policy tools that, depending on particular state design, can favor in-state power and discriminate against out-of-state power. States may not "provid[e] a direct commercial advantage to local business."[341] Laws that attempt to arrest participation of out-of-state energy on an equal basis with in-state energy risk violating the Commerce Clause.[342]

Such suspect laws can assume the form of added taxes and charges on out-of-state goods.[343] States are prohibited from attaching restrictions to any goods that they import from other states.[344] Furthermore, states cannot regulate in ways such that the practical effect is to control conduct in other states.[345] Where a state statute provided a tax exemption for sales of two types of wine that were produced from in-state products, the effect was practically state-specific discrimination without needing to mention the state by name, and it was found to be discriminatory in violation of the

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[337] Dep't of Revenue v. Davis, 553 U.S. 328, 338 (2008) (quoting Oregon Waste Sys. Inc. v. Dep't of Envtl. Quality, 511 U.S. 93, 99 (1994)).

[338] Brown & Williamson Tobacco Corp. v. Pataki, 320 F.3d 200, 209 (2d Cir. 2003) (quoting Nat'l Elec. Mfrs. Ass'n v. Sorrell, 272 F.3d 104, 108 (2d Cir. 2001)).

[339] *See* New York v. FERC, 535 U.S. 1, 16 (2002) ("[T]ransmissions on the interconnected national grids constitute transmissions in the interstate commerce.").

[340] FERC v. Mississippi, 456 U.S. 742, 757 (1982).

[341] Nw. States Portland Cement Co. v. Minnesota, 358 U.S. 450, 458 (1959).

[342] *See, e.g.*, Healy v. Beer Inst., 491 U.S. 324, 326-27, 343 (1989) (striking the requirement that the price of beer be more than that charged out-of-state).

[343] *See, e.g.*, Chem. Waste Mgmt. v. Hunt, 504 U.S. 334, 336-37 (1992) (invalidating an Alabama law imposing an extra fee on imported hazardous waste).

[344] C & A Carbone, Inc. v. Town of Clarkstown, 511 U.S. 383, 393 (1994); *see also* W. Lynn Creamery, Inc. v. Healy, 512 U.S. 186, 192 (1994) ("The Commerce Clause . . . limits the power of the [state] to adopt regulations that discriminate against interstate commerce.").

[345] *Beer Inst.*, 491 U.S. at 336; *see also C & A Carbone*, 511 U.S. 383 at 393.

Dormant Commerce Clause.[346] States cannot regulate to favor, or require use of, their own in-state energy resources even for a small percentage of total use,[347] nor can they, by regulation, harbor energy-related resources originating in-state.[348] States cannot give income tax credits to only in-state producers of fuel additives.[349] States cannot even require in-state fuels for the rationale of satisfying federal Clean Air Act requirements.[350] The Supreme Court has consistently required that the regulation of power by the states must not discriminate with regard to the origin of power or the ultimate impact of the power, which may discourage its flow in interstate commerce:

> Our cases consistently have held that the Commerce Clause of the Constitution . . . precludes a state from mandating that its residents be given a preferred right of access, over out-of-state consumers, to natural resources located within its borders or to the products derived therefrom . . . [A] "State is without power to prevent privately owned articles of trade from being shipped and sold in interstate commerce on the ground that they are required to satisfy local demands or because they are needed by the people of the State.[351]

Recent federal court opinions construing state electric regulation have scrupulously followed this doctrine.[352]

B. State Anti-Competitive RPS Programs

RPSs at the state level do not raise constitutional Supremacy Clause issues, but some state programs do raise Dormant Commerce Clause

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[346] *See* Bacchus Imps., Ltd. v. Dias, 468 U.S. 263, 264 (1984).

[347] Wyoming v. Oklahoma, 502 U.S. 437, 454-56 (1992) (showing that the Oklahoma statute that was overturned involved only a 10% allocation of the market to in-state producers, which resulted in the market changing from almost all out-of-state coal to "utilities purchased [in-state] Oklahoma coal in amounts ranging from 3.4% to 7.4% of their annual needs," and a corresponding decline of Wyoming coal purchases); *see also* Alliance for Clean Coal v. Craig, 840 F. Supp. 554, 560 (N.D. Ill. 1993).

[348] New England Power Co. v. New Hampshire, 455 U.S. 331, 339 (1982).

[349] *See* New Energy Co. v. Limbach, 486 U.S. 269, 271, 278-80 (1988).

[350] Alliance for Clean Coal v. Miller, 44 F.3d 591, 596 (7th Cir. 1995).

[351] *New England Power Co.*, 455 U.S. at 338-89 (quoting Foster-Fountain Packing Co. v. Haydel, 278 U.S. 1, 10 (1928)).

[352] *See, e.g.*, Entergy Nuclear Vt. Yankee, L.L.C. v. Shumlin, 733 F.3d 393, 430 (2d Cir. 2013) (citing *New England Power Co.*, 455 U.S. at 338-339).

issues. A number of the twenty-nine states with RPSs have incorporated credit multipliers, geographic restrictions, or preferences to promote in-state/in-region generation of power, to the exclusion of external power, in the following percentages:

- Eight of the twenty-nine RPS states, or 27%, have REC multipliers for in-state generation: Arizona,[353] Colorado,[354] Delaware,[355] Maine,[356] Michigan,[357] Missouri,[358] Nevada,[359] and Washington.[360]
- Four of the RPS states, or 14%, including two states that also provide for a geographically discriminatory REC multiplier, have either a requirement or preference for in-state generation: California,[361] Colorado,[362] North Carolina,[363] and Ohio.[364]
- Four of the twenty-nine RPS states, or 14%, give program preferences to the use of in-state manufactured products or in-state labor forces: Arizona,[365] Delaware,[366] Michigan,[367] and Montana.[368]
- Eleven of the twenty-nine RPS states, representing 38% of RPS states, have a requirement for in-region, rather than in-state, geographic location of generation to create RECs, including one of the states that also has in-state multipliers and one with an in-state preference: Connecticut,[369] Illinois,[370] Maine,[371]

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[353] ARIZ. ADMIN. CODE § R14-2-1806(D)-(E) (2014).
[354] COLO. REV. STAT. §§ 40-2-124(c)(V)(A)-(D), (c)(IX), (d) (2015).
[355] DEL. CODE ANN. tit. 26, §§ 356(a)(1), (d)-(e) (2015).
[356] ME. REV. STAT. tit. 35-A, § 3605 (2015).
[357] MICH. COMP. LAWS § 460.1039(1) (2015).
[358] MO. REV. STAT. § 393.1030(1) (2015).
[359] NEV. REV. STAT. § 704.7822 (2014).
[360] WASH. ADMIN. CODE § 194-37-110(1)(c)(i)-(iii) (2015).
[361] *California: Renewables Portfolio Standard*, DSIRE, http://programs.dsireusa.org/system/program/detail/840 (last updated Oct. 7, 2015) (explaining that a maximum of 25% of RPS compliance can be achieved through the use of tradable renewable energy credits; therefore, the remainder of the RPS compliance must be attained through in-state power sales).
[362] COLO. REV. STAT. § 40-2-124(e)(ii)-(iii) (2015).
[363] N.C. GEN. STAT. § 62-133.8(b)(2)(e) (2014).
[364] OHIO REV. CODE ANN. § 4928.64(B)(3) (West 2015).
[365] ARIZ. ADMIN. CODE § R14-2-1806(D)-(E) (2014).
[366] DEL. CODE. ANN. tit. 26, § 351(b)-(c) (2015).
[367] MICH. COMP. LAWS § 460.1001(2)(a)-(d) (2015).
[368] MONT. CODE ANN. § 69-3-2005(3)(a) (2015).
[369] CONN. GEN. STAT. § 16-245a(b) (2015).
[370] 20 ILL. COMP. STAT. 3855/1-56(b) (2014).

Maryland,[372] Massachusetts,[373] New Hampshire,[374] North Carolina,[375] Ohio,[376] Oregon,[377] Pennsylvania,[378] and Rhode Island.[379]

- Eleven of the twenty-nine states, or 38%, have an in-state requirement for certain distributed power.[380]
- Four of the twenty-nine states, or 14%, have a benefit for an in-state capital component or labor.[381]
- Some states have multiple multipliers and preferences.[382]
- Only seven of the twenty-nine states, or 24%, have no geographic preferences in their laws.[383]

Recently, in a unanimous decision, Justice Richard Posner, for the Seventh Circuit Court of Appeals, relied on the scholarship of Professor Steven Ferrey on the respective jurisdiction of state and federal government to regulate electricity.[384] The decision, in *dicta*, declared that a state limiting RPSs to in-state generation violated the Commerce Clause: "it trips over an insurmountable constitutional objection. Michigan cannot, without violating the commerce clause of Article I of the Constitution, discriminate against out-of-state renewable energy."[385] Another suit in Colorado, involving in-state restriction on RPS RECs in the state, motivated a change in state law,[386] and a suit on Missouri RPS

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[371] 65-407-311(A)-(C) ME. CODE R. § 6 (LexisNexis 2015).

[372] MD. CODE REGS. 20.61.03.02(A) (2015).

[373] MASS. GEN. LAWS ch. 25A, § 11F(a) (2015).

[374] N.H. REV. STAT. ANN. § 362-F:6(I) (2015).

[375] N.C. GEN. STAT. § 62-133.8(b)(2)(e) (2014).

[376] OHIO REV. CODE ANN. § 4928.64(C)(5) (West 2015).

[377] OR. REV. STAT. ANN. § 469A.135(1)(a), (2) (West 2015).

[378] 73 PA. STAT. AND CONS. STAT. ANN. § 1648.4 (West 2015).

[379] 39 R.I. GEN. LAWS § 39-26-4(d) (2015).

[380] Ferrey, *supra* note 318, at 75-77 (noting that resource eligibility in state RPS programs has expanded beyond traditional renewables).

[381] *Alternative Energy*, *supra* note 280, at 292 (listing Arizona, Delaware, Michigan, and Montana as having this in-state benefit).

[382] *Id.* at 291–92.

[383] *Id.* at 292.

[384] *See* Ill. Commerce Comm'n v. FERC, 721 F.3d 764, 776 (7th Cir. 2013) (citing Ferrey, *supra* note 318, at 106-07).

[385] *Id.* (explaining that Michigan initiated the issue of in-state electric power discrimination in its RPS program to demonstrate that transmitted out-of-state power was not of the same value as in-state electricity, and therefore, that Michigan should not have to pay a share of power line tariffs transmitting power from out of state).

[386] Complaint for Injunctive & Declaratory Relief, Am. Tradition Inst. v. Colorado, 876 F. Supp. 2d 1222 (D. Colo. 2012) (No. 1:11-cv-00859-WJM-BNB), *available at* http://www.americantradition.org/wp-content/uploads/2011/04/ATI-RPS-Complaint-ATI-v-Colorado.pdf (explaining that the ATI, through its Environmental Law Center, filed a lawsuit in

RECs limited only to in-state projects caused state withdrawal of the program.[387] As an additional note, Justice Scalia of the U.S. Supreme Court, concurring in a majority opinion, submitted that, "subsidies for in-state industry . . . would clearly be invalid under any formulation of the Court's guiding principle" for Dormant Commerce Clause cases.[388]

C. Competition, the Meter, and Ownership

Regulated utilities are generally barred from providing solar photovoltaic ("PV") units behind the meter on the customers' property to sell to their own customers.[389] Third-party ownership of residential PV systems constitutes more than 60% of ownership in California and Massachusetts, and more than 80% in Arizona and California.[390] At this time, utilities do not earn a profit on PV distributed generation which others own.[391] Some utilities propose that they be allowed recovery through rate-base solar on customer rooftops, which very few states now permit.[392]

In 2014, Arizona Public Service Company ("APS"), a large Arizona-regulated utility, filed a plan called *AZ Sun DG* with the Arizona Corporation Commission, under which APS would lease conventional consumer rooftops for its own PV generation purposes.[393] Under a twenty-year conventional lease, APS would pay homeowners $30/month (set off as a billing credit) for use of their roofs to install and own 20 MW of solar photoelectric systems on 3,000 customer homes.[394] APS would itself incur the capital, installation, and maintenance costs for 4-8 kW systems to be placed on each of those 3,000 homes, which was estimated to cost $57-$70

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federal court challenging the constitutionality of Colorado's renewable energy standard arguing that because the state mandate provides economic benefits to Colorado's renewable electricity generators that are not available to out-of-state power generators, the program violated the Dormant Commerce Clause).

[387] State *ex rel.* Mo. Energy Dev. Ass'n v. Pub. Serv. Comm'n, 386 S.W.3d 165 (Mo. Ct. App. 2012) (ruling that the RPS program "takes the cash property of utilities (and their ratepayers) and transfers it to certain customers" without due process. The decision was reversed on appeal).

[388] W. Lynn Creamery, Inc. v. Healy, 512 U.S. 186, 208 (1994) (Scalia, J., concurring).

[389] *See* James Tong & Jon Wellinghoff, *Tong & Wellinghoff: Should Utilities Be Allowed to Rate Base Solar?*, UTILITYDIVE (May 11, 2015), http://www.utilitydive.com/news/tong-wellinghoff-should-utilities-be-allowed-to-rate-base-solar/396283/.

[390] GTMRESEARCH, U.S. SOLAR MARKET INSIGHT REPORT: Q2 2013 (2013).

[391] *See* Tong & Wellinghoff, *supra* note 389.

[392] *See id.*

[393] Bruce W. Radford, *Rent the Rooftop: A New Front Opens in the Solar Wars*, PUB. UTIL. FORTNIGHTLY (Aug. 2014), http://www.fortnightly.com/fortnightly/2014/08/rent-rooftop#sthash.kJNGCRsO.dpuf.

[394] *Id.*

million in total, or $19,000-$24,350 per home ($3,000-$5,000/kW installed).[395]

The key distinction is that these would *not* be competitive distributed generation; they would be on the utility side of the meter, which would be below the roof at grade in the dwelling. Therefore, the power would be regarded as any other generation project owned by the utility, but situated on land and structures owned by the customer rather than the utility. Here, however, the meter is the message: on which side of the meter placement one constructs power generation is critical. APS would own both the PV panels and their power output. All power would later be transacted as retail power at the regulated retail rate.[396]

This is a means to accelerate the use of solar, but not to accelerate competition in generation. It preserves utility use of the transmission and distribution network, and customer contributions to the utility for all such power. A representative of the Solar Energy Industries Association reacted:

> In a move condemned by many solar companies in Arizona, the state's largest utility, APS, has announced that it will begin installing rooftop solar on customers' homes . . . After attacking rooftop solar companies in Arizona relentlessly for more than a year, this latest tactic by APS has a 'Trojan Horse' smell to it. Our member companies welcome fair and equal competition, but this move would stack the deck in favor of a company which can rate base solar with a guaranteed rate of return. How is that fair? The Arizona Corporation Commission needs to think this through very carefully.[397]

The home customer receives $360/year, or more than $4,000 over twenty years, for outlaying no capital, taking no risk, compromising none of its electric service provisions, and having a "solar home."[398] It is a formula that is roughly equivalent to an approximately 50% reduction in the cost of electric service.

With a median size of 5-6 kW PV array, APS might generate something in the range of 8,000 kWh of electricity, which would have a

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[395] *Id.*

[396] *Id.* (differing from the so-called "Buy All, Sell All" business model, where the utility buys the customer-owned output at the lower wholesale rate and sells back the power to customers at the higher retail rate, thus still collecting and payment for transmission and distribution).

[397] *Id.*

[398] *Id.*

retail value of approximately $4,000/year, and a retail value of more than twice that when delivered to a consumer account. The host consumer cuts its electricity costs roughly in half with little to no risk, while the utility generates power worth more than its out-of-pocket capital and operational cost. The utility is also able to realize retail T & D charges associated with all power, and the state realizes a policy goal of reducing criteria pollution and carbon emissions, while going solar. The issue here, though, is whether it promotes or hinders competition.

D. The Split Holdings on Liquid Energy—LCFS

In California, regulations regarding greenhouse gas reduction include an element called the low carbon fuel standard (LCFS), the purpose of which is to "reduce greenhouse gas emissions by reducing the full fuel-cycle, carbon intensity of the transportation fuel pool used in California . . . ."[399] By the year 2020, the LCFS rule is to reduce the carbon content of transportation fuels sold in California by 10% from the year 2010 baseline.[400] The LCFS regulates transportation fuels that are "sold, supplied, or offered for sale in California" and focuses on the "carbon intensity" of fuels . . . ."[401] Carbon intensity is not limited to how much carbon the fuel contains, but also includes the amount of carbon released in the full fuel cycle.[402] Thus, the provider's carbon intensity score is affected by the location of its commerce.

In a case in the Eastern District of California, *Rocky Mountain Farmers Union v. Goldstene*,[403] which is distinct from a somewhat similar suit brought in California state court involving the LCFS rule, [404] plaintiffs challenged the LCFS rule as being anti-competitive and violating the

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[399] CAL. CODE REGS. tit. 17, § 95480 (2015).

[400] *Id.* § 95480.1(a)-(b) (2015).

[401] *Id.*

[402] *Id.* § 95481(a)(16) (2010); *id.* § 95481(a)(38) ("lifecycle greenhouse gas emissions": "aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Executive Officer, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.").

[403] Rocky Mountain Farmers Union v. Goldstene, 843 F. Supp. 2d 1071, 1081 (E.D. Cal. 2011).

[404] Poet, L.L.C. v. Cal. Air Res. Bd., No. F064045, slip op. at 1 (Cal. Ct. App. June 3, 2013), *available at* http://www.edf.org/sites/default/files/5th%20appelate%20LCFS%20ruling%206.3.13.pdf (arguing that CARB failed to respond to numerous public comments, that it omitted documents from the rulemaking file, and that the LCFS will lead to increased GHG emissions, not the reductions it promises; Poet alleged that CARB's LCFS rule exceeds the scope of authority delegated to it by the legislature).

Dormant Commerce Clause of the Constitution.[405] The LCFS regulation incorporates the differences between indirectly associated carbon emissions from transportation, the farming methods used to raise the agricultural produce, and the fuel used to produce the electricity in the state where the ethanol is produced into its calculations.[406] In 2011, the federal district court invalidated certain parts of the LCFS rule and enjoined the rule's enforcement, as it "discriminate[d] against out-of-state corn-derived ethanol while favoring in-state corn ethanol and impermissibly regulate[d] extraterritorial conduct."[407] The court held that the LCFS differentiated based on place of origin of the commerce and concluded that it discriminated on its face against out-of-state corn-derived ethanol.[408]

The trial court, however, found that the LCFS served a legitimate local purpose, but the defendants had not met their burden to show that there is not a nondiscriminatory means to adequately serve their objective.[409] The court found that California had several other means to address the state's purpose without discriminating against out-of-state fuel products.[410] The court held that the LCFS "may not impose a barrier to interstate commerce based on the distance that the product must travel in interstate commerce."[411]

In a split decision, with a dissent, the Ninth Circuit reversed the trial court finding of unconstitutionality[412]. The majority determined that it was acceptable for a state to calculate transportation CO_2 in the carbon emissions index or rating of delivered fuel.[413] A petition for a rehearing en banc was denied, with members of the Ninth Circuit dissenting from that denial noting that, "California could—under the majority's reasoning—penalize out-of-state wineries to account for the environmental effects of transporting their wines to California."[414]

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[405] *Rocky Mountain Farmers Union*, 843 F. Supp. 2d at 1081.

[406] *Id.* at 1088.

[407] *Id.* at 1105.

[408] *Id.* at 1087.

[409] *Id.* at 1093 (showing that the plaintiffs offered many nondiscriminatory alternatives including a tax on fossil fuels or solely regulating tailpipe emissions).

[410] *Id.* at 1093-94 (citing Dean Milk Co. v. City of Madison, 340 U.S. 349 (1951)).

[411] *Id.* at 1089.

[412] *Id.* at 1088.

[413] Rocky Mountain Farmers Union v. Corey, 730 F.3d 1070, 1088 (9th Cir. 2013).

[414] Rocky Mountain Farmers Union v. Corey, 740 F.3d 507, 518 (9th Cir. 2014) (Smith, J., dissenting).

E. Restriction of Power Flows and Power Fuel

In 2014, the Federal District Court for the District of Minnesota struck down Minnesota's carbon emissions statute, finding that the statute impermissibly regulated extraterritorial commerce in violation of the Dormant Commerce Clause.[415] The statute at issue, Minnesota's Next Generation Energy Act ("NGEA"), sought to limit increases in "statewide power sector carbon dioxide emissions."[416] The statute prohibits any "person" from importing or committing to import power from a new large energy facility,[417] or entering into a new long-term power purchase agreement that would contribute to statewide power sector carbon dioxide emissions.[418] The state of North Dakota, along with several coal-dependent utilities and power plants, brought a lawsuit against Minnesota, alleging the statute violated the Commerce Clause of the U.S. Constitution.[419]

The court held that a statute's plain meaning could not be disregarded where its language is clear and unambiguous.[420] It found the statute per se invalid, because the plain language of the statute violated the extraterritoriality doctrine when it "requires people or businesses to conduct their out-of-state commerce in a certain way," regardless of legislative intent or whether it has effects within the state.[421] The "critical inquiry," said the court, "is whether the practical effect of the regulation is to control conduct beyond the boundaries of the State."[422] A statute's practical effect is evaluated not only by looking at its consequential effects, but also at how it would interact with the legitimate regulatory schemes of

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[415] North Dakota v. Heydinger, 15 F. Supp. 3d 891, 919 (D. Minn. 2014).

[416] *Id.* at 897 (citing MINN. STAT. § 216H.03, subd. 2 (2011) (defining "statewide power sector carbon dioxide emissions" as "the total annual emissions of carbon dioxide from the generation of electricity within the state and all emissions of carbon dioxide from the generation of electricity imported from outside the state and consumed in Minnesota.")).

[417] MINN. STAT. § 216H.03, subd. 3(2) (2015).

[418] *Id.*

[419] *Heydinger*, 15 F. Supp. at 899, 903, 908 (showing that the Plaintiffs also claimed the statute violates the Supremacy Clause, as it is preempted by the Clean Air Act, the Federal Power Act, and the Privileges and Immunities Clause and Due Process Clause of the Fourteenth Amendment of the U.S. Constitution, and therefore sought declaratory judgment. In 2012, the court granted partial judgment on Counts IV and VI in favor of the defendants, found for the plaintiffs on Count I, and denied the remaining counts as moot).

[420] *Id.* at 909 (citing Cotto Waxo Co. v. Williams, 46 F.3d 790, 792 (8th Cir. 1995)).

[421] *Id.* at 910-11 (quoting *Cotto Waxo Co.*, 46 F.3d at 793) (finding that because the NGEA violated the extraterritoriality doctrine, it did not address whether the statute is discriminatory or undergoes a balancing test).

[422] *Id.* (quoting Healy v. Beer Inst., 491 U.S. 324, 336 (1989)).

other states, and what the effect there would be if many states adopted similar legislation.[423]

In addition to regulating wholly out-of-state activity, the court determined that the NGEA also improperly required out-of-state merchants to seek regulatory approval before transacting with other non-Minnesota entities.[424] According to the court, if multiple states were to adopt similar legislation, entities involved in an interconnected multi-state system like MISO could potentially be subject to several state laws, regardless of whether they were transacting commerce in those states.[425] The "current marketplace for electricity would come to a grinding halt."[426] The Minnesota court treated electricity as distinct from other energy sources, which it is both in terms of its physics and its status in American law.[427] The NGEA constitutes extraterritorial legislation and is *per se* invalid under the Dormant Commerce Clause.[428] The court held that "[s]uch a scenario is 'just the kind of competing and interlocking local economic regulation that the Commerce Clause was meant to preclude.'[429]... 'any attempt directly to assert extraterritorial jurisdiction over persons or property would offend sister States and exceed the inherent limits of State's power.'"[430]

F. Massachusetts RPS Regulation

One example of a successful suit regarding state RPS comes from Massachusetts where TransCanada Corporation, the owner of a Maine wind project, alleged that Massachusetts' renewable energy tradable energy credits under capped incentives was an uncompetitive program, and therefore violated the Constitution.[431] The suit alleged that Massachusetts'

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[423] *Id.*

[424] *Id.* at 918.

[425] *Id.*

[426] *Id.*

[427] *Id.* at 917.

[428] *Id.* at 914.

[429] *Id.* at 918 (citing Healy v. Beer Inst., 491 U.S. 324, 337 (1989)).

[430] *Id.* at 911 (citing Edgar v. Mite Corp., 457 U.S. 624, 642 (1982)). North Dakota and representatives of its coal industry also sued Minnesota on Article VI grounds, alleging that it imposed constitutional violations when it affected the wholesale price and transmission of power within exclusive federal wholesale electricity pricing authority. The court did not need to reach this issue, having already found the statute unconstitutional. *Id.* at 911-12.

[431] Complaint ¶ 24, TransCanada Power Mktg. Ltd. v. Bowles et al., No. 4:10-cv-40070-FDS (D. Mass. April 16, 2010), *available at* https://www.bloomberglaw.com/document/X1Q6LBO8DLO2?imagename=1-1.pdf (requires Bloomberg account access); Erin Ailworth, *State Looking to Settle Suit Over Law on Clean Energy*, BOSTON GLOBE (May 27, 2010),

limitation on eligible Solar Renewable Energy Credits ("SRECs"), as well as issuance of long-term power purchase contracts only to Massachusetts companies, discriminated against out-of-state renewable energy projects in violation of the Dormant Commerce Clause.[432] After stating that it had confidence in its position, Massachusetts immediately settled the litigation and provided the plaintiff relief.[433]

G. Federal Precedent on State Net Metering Incentives

If applicable federal law limited net metering, it would reduce the competition from on-site generation. FERC decisions have created questions, but have not yet formally reached answers as to whether state net-metering rules can apply to all of these net power export transactions.[434] In 2001, the FERC rejected the utility MidAmerican Energy Company's challenge to Iowa's net metering rule,[435] concluding that "no sale occurs when an individual homeowner . . . installs generation and accounts for its dealings with the utility through the practice of netting."[436] The *MidAmerican* decision suggests, but did not need to reach on the facts presented, that a wholesale sale occurs when the customer has transferred more power to the utility through net metering than the customer has purchased from the utility over the course of the billing period.[437]

In a 2009 decision, FERC defined net metering as:

> A participant in a net metering program must be a net consumer of electricity – but for portions of the day or portions of the billing cycle, it may produce more

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http://www.boston.com/business/articles/2010/05/27/lawsuit_hits_mass_law_promoting_local_energy_providers/.

[432] *Id.* at 25.

[433] *See* Partial Settlement Agreement, TransCanada Power Mktg. Ltd. v. Bowles et al., No. 4:10-cv-40070-FDS (D. Mass. Apr. 16, 2010), *available at* http://www.mass.gov/eea/docs/doer/renewables/solar/settlement-agreement.pdf.

[434] MidAmerican Energy Co., 94 F.E.R.C. ¶ 61,340, at 62,263 (2001); *See* Sun Edison L.L.C., 129 FERC ¶ 61,146, at 61,620 (2009).

[435] *MidAmerican Energy Co.*, 94 F.E.R.C. at 62,263.

[436] *Id.*

[437] *See id.* ¶ 62,262. In its order, FERC also held that a one-month time interval during which the net metering process may take place is allowable. *Id.* ¶ 62,264. Previously, FERC had only permitted net metering to be measured over a one-hour interval, though it stated that it was open to considering other time periods. *Id.* ¶ 62,263. Since the determination as to whether federal law applies focuses on whether the customer has made a net sale at the end of the billing cycle, the allowable length of the billing cycle is crucial. *Id.*

> electricity than it can use itself. This electricity is sent back onto the Transmission System to be consumed by other end-users. Since the program participant is still a net consumer of electricity, it receives an electric bill at the end of the billing cycle that is reduced by the amount of energy sold back to the utility.[438]

This 2009 decision held that the owner of the power and/or the user of the power engaged in qualified netting of power only to the extent that less power was sold to the grid by the renewable generator than purchased from the grid.[439] Net metering has come under limited legal attack for allowing large freestanding wholesale power generation units to reap a high retail credit value.[440]

VI. LEGAL FRICTION BETWEEN COMPETITIVE FORCES AND POWER

For the country to transition to greater competition in power, it will require both coordinated federal and state regulatory decisions. Each level of government in our federalist system, and under the Federal Power Act, exercises distinct jurisdiction regarding the physical and transactional aspects of power.[441] With regard to state authority to exercise state incentives which can favor in-state commerce:

- FITs have been struck as illegal/unconstitutional;[442]

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[438] *Sun Edison L.L.C.*, 129 F.E.R.C. at 61,620. Sun Edison constructed, financed, operated, and maintained solar-powered generation facilities at host sites. *Id.* ¶ 61,618. Sun Edison asked FERC to confirm that subsidiary sales do not constitute a wholesale in interstate commerce or a transmission of electric energy in interstate commerce for purposes of the Federal Power Act, nor involve jurisdictional rates for purposes of the Public Utility Holding Company Act. *Id.*

[439] *See id.* Of note, most states have adopted "one year" as the carryover period for accumulated credits, after which they are either ceded to the utility or cashed out from the customer at avoided cost. *See* UNLOCKING, *supra* note 308, at 280-88. By paying customers the avoided cost rate at the end of the twelve-month period, utilities are complying with the Public Utility Regulatory Policies Act (PURPA), which requires utilities to purchase Qualifying Facilities' (QF) power at the avoided cost rate. *See* 16 U.S.C. § 824a-3(b) (2011). In addition, many states, such as New Jersey and Colorado, limit the size of eligible renewable energy systems to that meet the requirements of the particular net metering customer. *See* N.J. ADMIN. CODE § 14:8-4.3.a (2008); 4 COLO. CODE REGS. § 723-3:3664 (LexisNexis 2015).

[440] *See Docket No. D-10-126 – Division of Public Utilities and Carriers' ("Division") Investigation Into Net Metering Complaint Relating to the Town of Portsmouth Wind Generating Facility*, RHODE ISLAND PUB. UTILS. COMM'N., http://www.ripuc.org/eventsactions/docket/D-10-126page.html (last modified Apr. 3, 2014).

[441] *See Sun Edison L.L.C.*, 129 F.E.R.C. at 61,620.

[442] *See* Cal. Pub. Utils. Comm'n, 132 F.E.R.C. ¶ 61,047, at 61,338 (2010).

- The methods that some states have used to implement RPSs are unconstitutional; the Seventh Circuit Court of Appeals declared in-state renewable energy resource favoritism unconstitutional in 2013;[443]
- Recent federal adjudicatory orders cast uncertainty on some states' design of net metering.[444]

While states have broad, separate energy regulatory authority to promote competition under the Federal Power Act, they are not without significant legal limitation.[445] Constitutional requirements are superior to the exercise of any state authority. At the time of the Constitution, there was no such thing as electric power or interstate power networks.[446] Some states have exercised their authority to promote more competition and incentives for certain favored technologies, but do so in ways that promote in-state interests and discriminate against interstate commerce.[447] This has triggered successful suits under the Dormant Commerce Clause of the Constitution; states cannot support competition through regulation in constitutionally discriminatory manners or manipulate wholesale power prices to do so.[448]

Pursuant to separate federal authority, the federal government has promoted competition in power transactions and transmission for two decades.[449] PURPA and federal tax credits and incentives have provided a significant foundation for new renewable energy development. FERC regulation and orders mandating greater competition in transmission of power, more flexible scheduling of intermittent renewable power resources, and no rights of first refusal for monopoly incumbent transmission of power have moved the interstate power system to greater competition.

However, the scope of federal jurisdiction has been limited pursuant to the authority under the Federal Power Act and the Supremacy Clause of the Constitution. To construct a more competitive power system, the

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[443] Ill. Commerce Comm'n v. FERC, 721 F.3d 764, 776 (7th Cir. 2013).

[444] *Sun Edison L.L.C.*, 129 F.E.R.C. at 61,621.

[445] LAWRENCE R. GREENFIELD, AN OVERVIEW OF THE FEDERAL ENERGY REGULATORY COMMISSION AND FEDERAL REGULATION OF PUBLIC UTILITIES IN THE UNITED STATES 12 (2010), *available at* http://www.ferc.gov/about/ferc-does/ferc101.pdf.

[446] *See* NEW RULES, *supra* note 5, at 261 (stating that power was first harnessed by Thomas Edison in 1878, a century into the formation of America).

[447] *See* discussion *supra* Section IV.

[448] *See* discussion *supra* Section V.

[449] FED. ENERGY REG. COMM'N, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY 2 (2006), *available at* http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf.

nation needs to interconnect the nation with copper wire to be able to transmit power competitively across state jurisdictional borders, and the courts have not allowed federal power to extend to transmission siting.[450] Nor have the courts allowed federal FERC power to extend to allow demand response resources to compete equally with power generation.[451] There are significant legal anomalies, however, as federal courts have recently stricken some federal energy initiatives.[452]

We proceed into the twentieth century with fifty separate states, and the federal government exercising simultaneous jurisdiction over different aspects of power in America. No other article of commerce is subject to the split federal-state jurisdictional authority embodied in the Federal Power Act and enforced through the Constitution. Yet, the power that is regulated does not change in any state in commerce;[453] it remains an energy field transmitted as an alternating current at 60 Hertz and cycles per second.[454] We have a legally differentiated regulatory system, with different incentives for competition or monopoly of generation and distribution in different states, for the most identical and uniform object in American commerce. In this legal mosaic, these various legal rules and holdings will sculpt the future of competition in power.

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[450] *See* discussion *supra* Section III.D.2.

[451] *See* discussion *supra* Section III.

[452] *See* discussion *supra* Sections III.C.1, III.D.4.

[453] NEW RULES, *supra* note 5, at 260-70 (providing a brief history of electric power). Until the early twentieth century, various suppliers provided electricity at different voltages, ranging from 100-600 volts and 40-133 cycles per second. *Id.* For the past century, electricity in the United States has been standardized at a set frequency of alternating current. *See also World Electricity Standards*, QUANTUM BALANCING, http://www.quantumbalancing.com/worldelectricity/electricityif.htm (last visited Oct. 25, 2015).

[454] *World Electricity Standards*, *supra* note 453.